EVALUATION OF A HEALTH CARE SYSTEM FOR CHILDREN UNDER FIVE YEARS OF AGE IN AFRICA

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CONTENTS

ABSTRACT

The system of health care known as the Under Fives Clinic has been in existence in some African countries for the past ten years. The present study endeavours to evaluate this system of health care. An epidemiological study was undertaken in four areas of Africa each with an established Under Fives Clinic. These areas were Ilesha and Esa Oke in Western Nigeria, Namitambo in the Southern Province of Malawi and Mansa in the Luapula Province of Zambia. The method used was a point prevalence study that involved a stratified sample of approximately 200 dwellings in which lived children under the age of five years, for each area. In Ilesha there were 434 children, in Esa Oke 405, in Namitambo 261, and in Mansa 314 children who were taken into the survey. Data were collected from the families of these children using a questionnaire administered by an interviewer, that sought information on family and domestic circumstances and the health of the child.

From this approach children who attended the clinic and those who did not were identified. A comparison between clinic attenders and non attenders has been made to discover whether there are any differences in the health of the two groups; and also what factors might influence health in these two groups. In general there were no major differences in health. Differences were found between the Under Fives Clinics in their activities, and this was reflected for example in the immunisation status of the children attending.

The present study was the first of its kind to undertake

a comparative evaluation of Under Fives Clinics in Africa. The methodology used in this study, with some modifications could be used in further evaluation studies where instead of doctors, medical auxillaries, lay workers and even secondary school children could perform the field work.

INTRODUCTION

In developing countries children face health problems which are in many ways different from those found in developed or industrialised countries. These are the end results of numerous interacting factors-genetic, environmental including hygiene, socio-political, educational, housing and cultural. Taken separately or in combination, these conditions account for the fact that the Infant Mortality rate in developing countries is about four times as high as in the more privileged parts of the world, and also for the forty to fifty-fold increase in the 1 - 4 year mortality found in the developing countries. For example in the United Kingdom the 1 - 4 year mortality in 1969 was 1/1,000 population. SOCIAL TRENDS (1972) and in Malawi the 1 - 4 year mortality was estimated at 52/1,000 population for the late nineteen sixties. COLE KING (1971).

The available resources in the form of staff, finances, buildings and drugs are limited in the developing countries. With the prevailing problems and the available resources a logical and practical methodology has to be applied to the existing situation in the hope that the primary health needs at least of the community would be met. Further, in the second half of the nineteen seventies there appears to be an increased likelihood of food shortages and even famine, and the governments in developing areas are likely to put more money into agriculture, and this may mean that the projected increase in health budgets are likely to be curtailed or not increased at all.

One of the most recent forms of health services available for the pre-school children in the developing countries is the Under Fives Clinic first started by Dr. David Morley at the Wesley Guild Hospital in Ilesha in the Western region of Nigeria in 1959.

These clinics have now been in existence in some areas in Nigeria for the past fifteen years. In the late nineteen sixties other African countries adopted these clinics as National Policy. They are now well established amongst other countries in Malawi, Zambia and Tanzania. This type of service has also spread beyond the African continent to Asia. The Under Fives Clinics have been established in many parts of India, and in 1969 the Sarawak Government accepted a plan for introducing these clinics in the rural areas of Sarawak. Over eighty five clinics are in existence in Sarawak at the present time. ROBERTS (1973).

The Under Fives Clinic was originally established to meet the basic health needs of the pre-school child. In practice, however, most of these clinics serve much larger populations than they were originally designed for, and have had to correspondingly spread their already meagre resources even more thinly. In spite of this there may still be scope to improve these services if the working of these clinics can be systematically reviewed. Where such reviews have been done they have usually taken the form of subjective impressions of their work gained through on site inspections or based on perusal of reports submitted by staff, which mostly emphasise the fulfillment of certain assigned tasks, for example the total numbers of immunisations given. These subjective approaches to evaluation tend to be of uncertain value particularly when clinics may be studied by different investigators. If however the achievements of the Under Fives Clinics can be evaluated using more objective criteria, comparisons may be made between these clinics and the effect of changes in the organisation and the work of the clinic effectively assessed.

At the time the study that forms the basis of this report was being planned, objective techniques for evaluating aspects of the Under Fives Clinics had not yet been applied. This report describes the evaluation of four Under Fives Clinics in Nigeria, Malawi and Zambia using objective methods. The study was carried out from January to May 1972.

CHAPTER 1. LITERATURE REVIEW

A. CHILDHOOD DISEASES IN DEVELOPING COUNTRIES.

(1) General considerations.

In industrialised countries most children are shielded from serious illness by good hygiene, effective sanitation, nutritious food, immunisation and a clean environment. The ready availability of skilled medical staff and adequate medical facilities ensures that most parents are able to obtain treatment for illnesses that occur among their children. As a result of these and other circumstances the technically advanced countries have a lowered mortality in childhood. For example in Canada the 1 - 4 year mortality for 1971 was 0.84/1,000 population. WORLD HEALTH STATISTICS ANNUAL (1971).

In developing countries serious illness in young children is both common and is accepted by parents as an almost normal feature of their society. Parents tend to seek medical advice only when their children are seriously ill and usually after the traditional forms of treatment have failed. WYON AND GORDON (1971) showed in their study in rural India that 85% women over forty years of age had lost, by death, one or more of their children. Nearly 50% of women had lost three or more live-born children. Thus loss of children by death is still a common occurence in the non-industrialised countries. WELLIN (1954) reports on the high Infant Mortality among the Peruvians. In one community in Peru, infant deaths were common and the society had adapted itself to accepting these deaths as normal by converting the funerals into a fiesta.

The majority of children in the developing countries suffer, at one time or other, from a wide variety of preventable diseases. Many of these illnesses are also complicated by malnutrition in the child. These preventable diseases arise, largely due to lack of public sanitation, community ignorance concerning nutrition and hygiene, and the widespread susceptibility of the children to these illnesses.

(2) Patterns of mortality in children.

The health situation in the developing countries is such that an extraordinary burden of disease falls on small children. In these countries 35 - 60% of all deaths occur in children under the age of five who make up only 17% of the total population. Table 1 gives data for three countries, Guatamala, Jamaica and Thailand, that are typical of this group. BRYANT (1969). This table confirms what has been said above. In each of these countries children under the age of five form approximately 16% of the population and yet account for up to 57% of the total deaths. By contrast Bryant has shown that in the United States of America this age group forms 10.8% of the population and accounts for less than 7% of all deaths.

TABLE 1.

DEATHS OF YOUNG CHILDREN IN

PROPORTION TO ALL DEATHS, THREE COUNTRIES BRYANT (1969).

Country	Deaths of young children		
	Under 1 year	1 - 4 years	Birth to 4 years
Guatamala	17,485	17,539	35,024
Jamaica	3,945	1,691	5,636
Thailand	43,489	32,353	75,842

Country	All deaths	Deaths of children under five as % of all deaths	Children under 5 as % of population
Guatamala	62,287	57	16.8
Jamaica	14,813	38	16.6
Thailand	221,157	34	16.3

Diseases tend to be concentrated in the first few years of life and mortality takes a high toll on the life of young children in the developing countries. However, very few sources of information are available on the mortality among young children in these countries. The following Table is taken from 'HEALTH CARE OF CHILDREN UNDER FIVE' (1973). In it the mortality in the 0 - 5 year age group is compared in different areas in the developing world. (Table 2)

TABLE 2.

NUMBER OF DEATHS BY SELECTED CAUSES AMONG CHILDREN UNDER FIVE

HEALTH CARE OF CHILDREN UNDER FIVE (1973)

Disease	Khanna study India	Imesi Nigeria	Luapula Zambia	North Sumatra	Pusan South Korea
Diarrhoeal disease	2%	12%	18%	25%	15%
Pneumonia	*	12%	10%	11%	9%
Malnutrition	***41%	12%	16%	26%	14%+
Malaria	*	8%	15%	8%	3%
whooping cough Measles Smallpox	**18%	8%	13%	7%	16%
Tuberculosis	3%	5%		6%	8%
Anaemia	*		7%	5%	7%
Neo natal	23%	*	*	*	*
Other causes	13%	43%	21%	11%	28%
Total	100%	100%	100%	98%	100%
Total deaths in children	1,958	?	340	1,282	1,036

* Included under 'other'
** Includes Tetanus
*** Includes malnutrition with diarrhoea
\+ These figures were collected soon after the Korean war. Since then malnutrition has practically disappeared from Korea.

These studies were carried out five to ten years ago in rural areas in India (Khanna study), rural Nigeria (Imesi), rural Zambia (Luapula) in Northern Sumatra and in South Korea.

Unfortunately as there is no reference to the total number of children in the 0 - 5 years age group for the communities it is thus not possible to ascertain mortality rates. These studies form very limited figures and are not based entirely on community studies although in each case the doctor concerned was working in the community as well as in the local hospital. In spite of these limitations it is notable that in each of the areas over 60% of the mortality is due to preventable causes such as malnutrition, malaria, whooping cough, measles, smallpox and tuberculosis.

Detailed data are given for causes of mortality in childhood in "Patterns of Mortality in Childhood" an excellent report of the Inter American Investigation of Mortality in Childhood organised by the Pan American Health Organisation (PAHO). PUFFER AND SERRANO (1973). Similar studies are not available for Africa. However data from the Americas can be used to illustrate the high mortality in childhood found in non industrialised countries in that continent. (It may be reasonable to assume that the patterns of mortality in the developing countries of Africa are broadly similar to those found in South America).

The Pan American Health Organisation project studied selected communities in the Americas. The research project was designed to establish death rates for infancy and childhood that would be as accurate and comparable as possible, taking into account biological as well as nutritional, sociological and environmental factors.

Mortality both in rural and urban areas, was studied in order to better understand their causes with a view to aid planning of childhood health services in the Americas.

TABLE 3

MORTALITY IN THE UNDER FIVE YEARS AGE GROUP

PUFFER AND SERRANO, PAHO STUDY (1973)

Country	Total Population	Total deaths in children under five	All causes Mortality rate/1,000	Measles deaths/ 100,000	Nutritional deficiencies deaths/ 100,000
Argentina	181,628	3,857	21.2.	82.0.	698.0.
Bolivia	158,046	4,276	27.0.	366.3.	969.3.
Brazil	338,154	9,073	26.8.	177.1.	1004.6.
Chile	207,532	2,714	13.1.	10.0.	322.0.
Columbia	278,571	4,230	15.1.	100.2.	618.9.
California	205,284	898	4.4.	0.5.	21.4.

It is clear from Table 3 that measles and malnutrition play major roles in the high mortality in children under the age of five. Even though it appears that the mortality due to measles is lower than that due to nutritional deficiencies, this does not take into account deaths due to multiple causes, for example, measles occuring with malnutrition, could be classified as a nutritional death. The synergistic effects of measles and malnutrition on deterioration of the health of a child has been well established. SCRIMSHAW, TAYLOR AND GORDON (1968).

In the Pan American study, all the available information for each death was considered in assigning cause of death. In

Table 3 deaths are classified by the underlying causes of death. The underlying cause of death was defined as the disease or injury which initiated the train of morbid events leading directly to death, and the contributary cause was any significant condition which unfavourably influenced the course of the morbid process and thus contributed to the fatal outcome, but which was not related to the disease or condition directly causing death. However in practise, the immediate and the terminal causes (complications and consequences), are not always the result of the underlying cause alone. However the implications of the concept of contributary causes is important from the present view point. For example, measures aimed at treating or preventing the underlying causes will not be sufficient to reduce mortality, appreciably, if the contributary conditions remain. The synergistic effects of malnutrition and infection have been referred to earlier; for example, in a campaign to prevent malnutrition, the children should also be prevented from contracting measles and other such infections by adequate immunisation.

The Chilean measles mortality appears low in comparison with other South American countries. A controlled trial of live measles vaccine was carried out in Chile in 1963 RISTORI, BOCCARDO, MIRANDA, BORGONO (1964). The lower measles mortality in this country could in all probability be attributable to this programme. Limited data are available for mortality studies in the African countries. These data usually consist of information from single hospitals. National and International studies on the scale of the Pan American Health Organisation study have not yet been attempted in the African continent. KOENIGSBURGER (1963) studied the paediatric services at Sokode Hospital in Dahomey and listed Malaria, respiratory infections, gastro-enteritis and Kwashiorkor as some of the major causes of mortality. CHRISTIAN (1967) reported on 373 autopsies performed on children in the Korle-Bu Hospital in Accra. The major pathological findings found in their order of frequency as the main cause of death was listed as follows:

(1) Malnutrition
(2) Broncho-pneumonia and upper respiratory infections
(3) Malaria
(4) Sickle cell Disease
(5) Prematurity
(6) Gastro-enteritis
(7) Accidents
(8) Congenital malformations
(9) Measles
(10) Aspiration asphyxia and pneumonitis
(11) Typhoid and Tuberculosis

He also stresses that most of the cases show multiple lesions related or unrelated, occuring concurrently.

(3) <u>Patterns of morbidity and hospital attendance</u>.

Some of the major health problems, facing developing countries, are presented by the unsatisfactory physical development of young children that often accompanies poor nutrition, and the effect this has, in maintaining high rates of morbidity and mortality. Political awareness of childhood illness as it affects national development and planning is well illustrated by the following remarks made by the Nigerian Minister of Health in 1961, at a conference held in Nigeria on "Infectious diseases of the pre-school child". IBRAHIM (1961). In his opening remarks the Minister stated "In the countries in West Africa as in many parts of the world a high proportion of the population falls into what may be termed the Pre-School group. The proportion is roughly 20%. Into what these children grow depends the future of our countries. It is right therefore that we nurture our children and send them unhandicapped physically or mentally by any scars resulting from the ravages of diseases. For the most part the diseases that leave the most scars are the infections diseases - paralysis from poliomyelitis, blindness from measles - to give two examples from a list that is all too long". It is encouraging to feel that politicians are as aware of these problems as are the doctors.

There is little doubt that morbidity (disease, sickness illness) as such is more difficult to measure than death, the latter being a readily defined event. The measurement of morbidity is plagued with difficulties, for example in the definition of an illness and the standardisation of criteria for the diagnosis of disease.

The EXPERT COMMITTEE OF THE WORLD HEALTH ORGANISATION ON HEALTH STATISTICS has over the years attempted to rationalise and standardise morbidity data. Definition of many terms used in collecting morbidity data has been established, and lists of International Classification of Diseases has been published for the guidance of all concerned with vital and health statistics. Fortunately most of the major diseases affecting children in Africa are communicable diseases where the diagnoses are fairly straightforward in comparison with for example the chronic diseases of middle life. However in developing countries para-medical staff are often responsible for the collection of morbidity data and it is imperative that they be given the necessary training for this and also that the criteria for diagnosis are agreed upon.

Morbidity data from developing countries in particular, on the prevalence and incidence of disease in children are limited. What information is available is usually derived from hospital inpatient and out patient records. Hospital records are however unlikely to accurately reflect the pattern of disease in the community. District and provincial hospitals usually act as referral centres, for patients with unusual or rare diseases. They thus take patients from a wide area. The pattern of disease seen in these hospitals may thus not be an accurate reflection of the disease pattern in the community around the hospital. Further some diseases prevalent in the community may never reach hospital. For example in some communities epilepsy is thought to be due to a curse of an enemy, and children and adults suffering from this disease are seldom taken to hospital. MACLEAN (1971).

Among the Bambara tribe in Mali treatment and prevention of measles lies with the practitioner who deals with the supernatural. These practitioners use charms and talismen in the treatment of measles. The severity of a case governs the number and anatomical placement of these objects. IMPERATO AND TRAORE (1969). Data collected from hospital records would tend in this case to under estimate the true morbidity of measles in the community. Furthermore, hospital attendance might be guided by the severity of the complaint. For example the more seriously ill, who may be unable to walk, remain at home due to the non availability of transport, and only those with relatively minor complaints may make the long journey to hospital for treatment. Hospitals differ in their admission policies and this may be reflected in the type of cases admitted. For example, medical staff may have an interest in specific diseases which might be selectively admitted. Not only do these cases tend to be selectively admitted but also the local people tend to respond to this interest by bringing to hospital more people suffering from these complaints.

However, in spite of the deficiencies in hospital records as indicators of the health of the community, the investigator in developing countries has often no recourse but to turn to hospital records where these are available, for information on the disease pattern in the community.

If we are willing to turn to hospital records,as a source of information on the pattern of disease in the community, then a fair amount of information is available from hospital records in developing countries throughout the world. The following

Table illustrates the type of information that is available from hospital records. Table 4 shows the breakdown by cause of cases seen at the out patient department of the government hospital in Bo, Sierre-Leone in 1959. THOMAS (1961). These are the major diagnoses for children in the 1 - 5 age group.

TABLE 4.

ANALYSIS OF CASES SEEN AT THE OUT PATIENTS DEPARTMENT AT THE BO HOSPITAL IN SIERRE-LEONE FOR 1959

THOMAS (1961)

	Number of Cases	%
Malaria	563	34.7%
Whooping cough	30	1.8%
Bronchitis	327	20.1%
Scabies	37	2.3%
Gastro enteritis	158	9.7%
Measles	85	5.3%
Malnutrition	8	0.5%
Other diagnoses	415	25.6%
TOTAL	1,623	100.0%

The author, who took the diagnoses from the out patient records considered that the number of cases of malnutrition was a gross under estimate, as many of the children diagnosed as suffering from another disease would also have their disease complicated by malnutrition. The diagnoses have been based on the most serious or prominent illness, for example, a child having gastro-enteritis following measles would be classified as measles rather than gastro-enteritis. Due to this method of disease classification, it would be seen that some diseases would be under estimated. In the Table 4 children diagnosed as suffering from measles and whooping cough appear to be few in comparison with the findings from other studies. As already mentioned this could be due to the local belief, in the community regards the causation of these diseases, which prevent mothers from seeking treatment at hospital. In some communities it is thought that these diseases are caused by evil spirits or due to the wrong doings of the ancestors. If such beliefs exist then the parents usually indulge in rituals and ceremonies which they believe are designed to cure the disease. Such communities would not bring their children suffering from measles or whooping cough to hospital. Also the acute nature of measles and whooping cough might account for the smaller numbers of these seen at the out patient department, as death or spontaneous cure reduces the numbers seeking out patient treatment. Also difficulties might arise in the diagnosis of whooping cough in acute stages. All of the medical conditions listed above are preventable, and it is important to realise that of the 1,623 visits made by children between the age 1 - 5 to the out patient department 1,208 or 74.4% had preventable diseases.

In developing countries mothers are inhibited from bringing their sick children early to hospital for a number of reasons. For example distance of the home from hospital, non availability

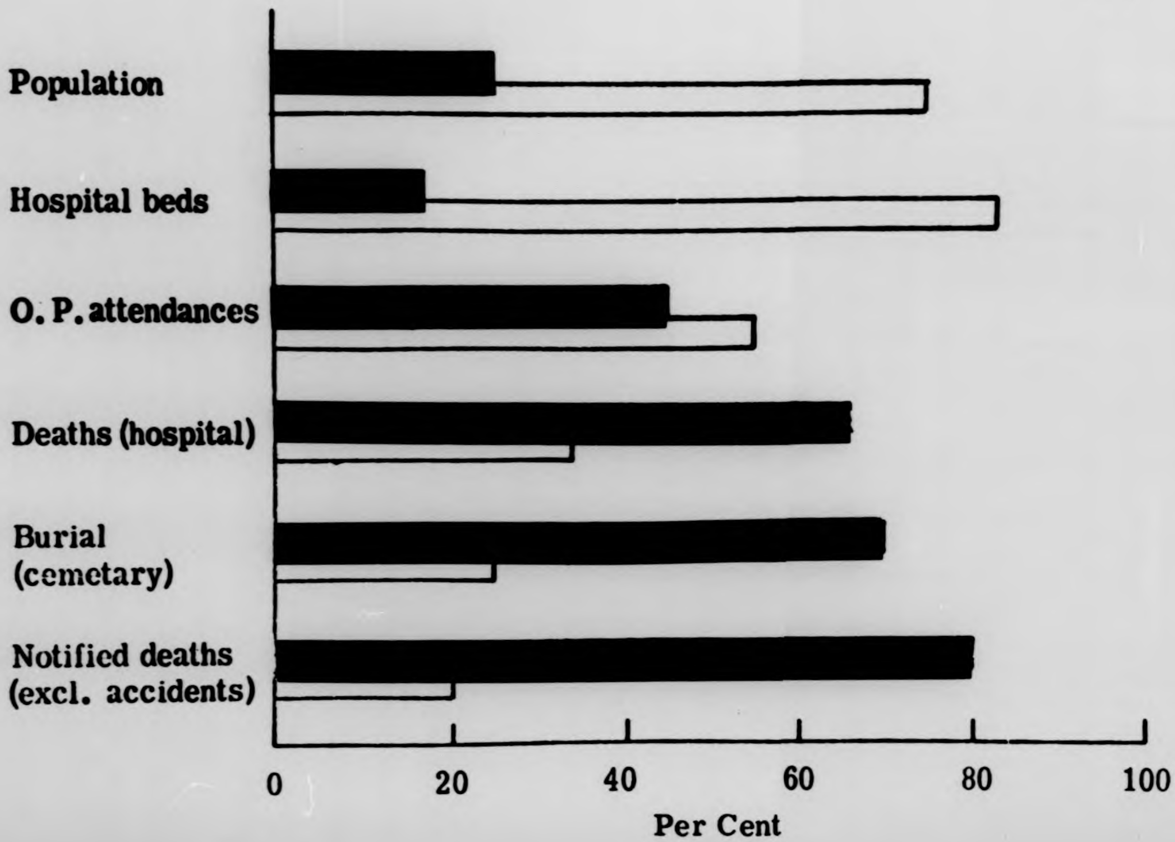
of transport, attitudes to hospital care and as already mentioned cultural barriers are some of them.
As a result a child may often be taken to hospital as a last resort, once all other forms of locally available native treatment have failed. SWIFT AND HAMILTON (1973) in their study in Uganda found that 48.79% of all hospital deaths occurred in the twenty four hours following admission to hospital, and that 8 - 9% deaths occurred on the second and third day and thereafter the rate falls to less than 1% on the ninth day. The authors found that the high numbers of deaths in the first day was not among the children coming from long distances. The authors conclude that the delay in obtaining treatment purely because of distances from the hospital does not seem to be the sole reason for the high incidence of mortality in the first twenty four hours of hospital admission. They suggest that factors other than distance from hospital, such as parents ability to recognise illness and its severity, their reactions to different diseases, the amenability of the disease to treatment by native or western methods, as possible explanations for the delay in seeking treatment.

Numbers of children seeking treatment at the out patients departments in hospitals and in rural and urban health centres are high. CUTHBERTSON AND MORLEY (1962) reported that over 9,000 children sought treatment at the Wesley Guild Hospital in Ilesha, Nigeria, every month. NOAK (1967) in her study in Zambia found that 30 - 45% of the first attenders at the Lusaka Hospitals and urban clinics were children under the age of five; however they formed only 19.5% of the population of Zambia. UNITED NATIONS DEMOGRAPHIC YEAR BOOK (1967). BOELENS (1968) FIG.1 showed that in Lusaka clinics the under fives formed 45% of first attenders. They constitute 66% of the total deaths in the Lusaka Central Hospital (now the University teaching hospital), and they also accounted for 75% of the burials in the Chingwele cemetery in Lusaka. In addition 80% of the notifiable diseases in Lusaka occurred in children, yet only 17% of the hospital beds in the Central Hospital were paediatric beds. The number of beds was in proportion to the population composition of 20% under the age of five but not in proportion to their dire needs. SHATTOCK (1971).

The situation as described above has been the experience of most health personnel working in developing countries. Children constitute a large percentage of the total attenders at out patient clinics at general hospitals. Furthermore facilities for in-patients for example the number of beds allotted, seem to be biased by the population composition than the disease patterns. Therefore even though a third to half of illnesses needing admission are confined to the paediatric age group, yet only about 10 - 20% of the hospital beds are

PROPORTIONS OF POPULATION, MEDICAL FACILITIES AND DEATHS UNDER ■ AND OVER □ 5 YEARS OF AGE (Lusaka)

FIG 1 Boelens (1968)



allocated to children. Clearly the need was evident for separating the services for children from those for adults, in order to provide more efficient services for both groups of patients. A great deal of differences exist in the requirements of the two groups. In the case of adults, it is necessary to see if the disease is serious, advise hospitalisation where necessary, and often offer a placebo for his ailments. However in clinics for children, in addition to curative treatment it is also necessary to stress preventive care and teaching. This will require frequent if brief contact between staff and patients. For the in patients many countries have developed special paediatric hospitals and this might be the answer to the above situation. On an out patient basis clinics specially catering to the needs of the children such as Under Fives Clinics could provide a solution.

(4) Problem of Protein Calorie Malnutrition.

Malnutrition in early childhood is still one of the major problems in most developing countries. BEHAR (1968) estimated that three hundred million pre school children suffer from some form of protein-calorie malnutrition and that 75% of them are under weight for age. Though easily recognised clinically in its gross forms, malnutrition is often missed in mild cases and the prevalence is thus likely to be under estimated. PUFFER AND SERRANO (1973), in the Pan American Health Organisation study referred to earlier, Malnutrition (Marasmus and Kwashiorkor) accounted for 33.9% of the total deaths under the age of five, i.e. 11,913 of a total of 35,095 deaths studied. KAPLAN (1969) working in Zambia found that 40% of her children died directly as a result of malnutrition or due to a combination of malnutrition and infectious disease. BILLEWICZ, THOMPSON, ILLSLEY, RAHMAN, THOMSON AND MCGREGOR (1968), in Gambia showed that 43% of children died before reaching the age of seven, either as a direct result of malnutrition or due to a disease complicated by the effect of malnutrition. COOK (1971) studied the admissions to twenty four teaching hospitals and paediatric research units in various parts of the world and he reports a hospital case fatality ranging from 12 - 52% of those admitted with these diagnoses.

Kwashiorkor is intimately related to a number of factors such as food habits, education and occupation of parents, beliefs and attitudes existing in the community. Although Kwashiorkor is a particularly good example to illustrate the interaction of these factors many diseases found in the community in developing countries shows the interaction of these situations. Figure 2. KING (1966b).

FIG 2

AN AID TO UNDERSTANDING THE COMMUNITY DIAGNOSIS OF KWASHIORKOR.

KING - 1966(b)

B. PROVISION OF MEDICAL CARE IN DEVELOPING COUNTRIES.

(1) Introduction.

"The cleavage of the world into rich nations and poor ones divides care in sickness quite as sharply as it does any other aspect of the human condition. In this, the great division of mankind, the rich have money and medical skills in comparative abundance, and the poor have not". KING (1966a)

(2) Manpower.

In the industrialised countries the doctor patient ratio is far higher than in the developing ones. For example the ratio for England and Wales in 1970 was one doctor for 820 patients WORLD HEALTH ORGANISATION STATISTICS ANNUAL (1970). The same report shows that the ratio for doctors for Nigeria as a whole is 1:20,530. However in Nigeria, due to the unequal distribution of doctors between urban and rural areas, i.e. in the concentration of doctors in the urban areas, the doctor patient ratio in rural areas is much higher. The shortage of medical staff is not confined to doctors. Throughout the developing world there exists even a greater shortage of para medical and auxillary staff. In Malawi in 1970 the nurse patient ratio was 1:16,090 and in Gambia the same ratio was 1:15,000 for 1970. WHO STATISTICS ANNUAL (1970)

(3) Economic Considerations.

In many developing countries, where resources are severely limited, health services must compete for funds with agricultural, educational and industrial projects. As a

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result the funds available for health services are far below the requirements. MORLEY (1973a) shows the bleak economic outlook for the developing countries during the next thirty years, and implies that the improvement in the health services will call for redeployment of services. (Table 5).
Table 5 taken from Morley's paper shows that in the less developed countries the expenditure for health per head is expected to increase three fold over a period of thirty years but this increase is insignificant as in reality this is an increase of two dollars over the entire period. However, even though in the more developed countries the increase in 2½ times only, in terms of money they would have an increase per head of 3,600 dollars, over the same period of time. It would be essential therefore especially in the developing countries to cost all aspects of medical care and to make the maximum use of the available resources in respect of manpower, building and facilities.

TABLE 5.

GROSS NATIONAL PRODUCT AND HEALTH EXPENDITURE PER CAPITA ($)

IN 1970 and 2000

	* Gross National Product/capita		Health expenditure/capita	
	Year 1970	Year 2000	Year 1970	Year 2000
More developed countries	2,200	5,800	100	250
Less developed countries	160	325	1	3

* the Gross National Product is estimated as the total

production, either in the wages earned, or for the farmer in terms of crops produced, whether these are eaten or sold. The differences that exist in the provision of health care in developing countries can be looked at in a different way by relating total expenditure on health care to total government expenditure.

TABLE 6.

Country	Total Health Expenditure as a % of general government expenditure	Total Health Expenditure per inhabitant (£ sterling)
Ghana	7.9	2.26
Ceylon	9.5	1.99
Jordan	3.4	1.78
United States of America	4.6	94.85
United Kingdom and Northern Ireland	16.4	34.20

Table 6 OFFICIAL RECORDS OF WORLD HEALTH ORGANISATION (1967) shows that Jordan and the United States of America spend 3.4% and 4.6% of the total general government expenditure on health, but when this is taken in relation to the population, i.e. per capita expenditure on health a large difference is seen. In the United States of America in 1967 £94.85 was spent per head, while in Jordan this figure was only £1.78. Even if Jordan spends its entire budget on health then it still cannot reach the amount spent per capita in the United States of America.

At present in most developing countries the greater part of the health expenditure is spent on a few large central hospitals, with smaller sums on peripheral hospitals and very little money left for medical care provided at health centres. To obtain maximum use of hospital services it would be essential to reserve hospital in patient care only for those cases that cannot be adequately treated on an out patient basis. LAWLESS, GARDEN AND LAWLESS (1966) writing from Zambia remarked "the wisdom of admitting children with medical diagnoses to hospital in under developed countries is questioned". SADRE AND DONOSO (1969) stated "it seems to us that under present circumstances, the admission to hospital of malnourished patients is to a large extent a waste of time and money".

A reduction in the number of admissions to hospitals can be achieved in several ways. The provision of early treatment on an out patient basis for conditions which might otherwise require hospital in patient treatment if left unattended; provision of immunisations and other forms of preventive medicine on an out patient basis thus reducing the morbidity of these conditions; encouraging and advising early hospitalisation for conditions that need hospital admission; early discharge from hospital where appropriate, with follow up on an out patient basis. A service which could provide on an out patient basis, curative and preventive medical care, and act as a screen for disease prior to hospital admission, would keep down the cost of health services. Such a service for children under the age of five is provided for at the Under Fives Clinic.

The high rate of child mortality is made even more overwhelming by the huge numbers of children in most tropical countries. MORLEY (1973b) showed that in a developing country 20% of the population are subsistence farmers or wage earners and provide resources for the balance 80% of population comprising of children under the age of five, school children and the old. In an industrialised country 60% of the population are between the ages of fifteen and sixty, and, in addition to the men, two out of three women in this age group are also wage earners. Thus it is seen that the wage earner in an non industrialised country has a bigger burden to bear in supporting his fellow countrymen than his counterpart in an industrialised country.

(4) Culture.

Culturally differences exist from one social group to another. A doctor only rarely practises among people with a culture identical to his own. It is necessary for medical workers anywhere to understand the patient's beliefs regarding the causation of disease, and the medical care provided must be carefully adapted to the opportunities and limitations of the local culture. The child rearing practises in developing countries differ fundamentally from those found in developing ones. However, within developing countries there is a wide variation in these practises. For example, the child who has been weaned from the breast is separated from the mother and he is promoted from dependent babyhood to the more independent status of a member of a sibling group. In some societies, such as the Baganda and the Zulu weaning from the breast is immediately associated with displacement from the mother - in some cases even by geographical separation from her. In other communities, such as the Yorubas in Nigeria, the whole process is much more gradual. JELLIFFE AND BENNETT (1972)

(5) Urbanisation.

Urbanisation brings with it problems associated with housing, adaptation to nuclear families (i.e. a family composed simply of parents and their children) Change from a subsistance economy to a cash economy and disruption of the rural way of life. This is mainly associated with the fall in living standards that usually accompany urbanisation. These problems are closely linked with overcrowding, shanty dwellings and maternal deprivation that is usually seen in the case of working mothers. KLEEVANS (1971) has shown that in a period of fifty years, i.e. 1920 - 1970 the urban population in developing countries has grown from 100 million to over 600 million and by 1980 may exceed the urban population of the technically advanced countries. FIGURE 3. If the health worker is aware of the health problems that could arise as a result of rapid urbanisation then he could look out for these and either try to prevent or find solutions for at least some of them.

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FIG 3

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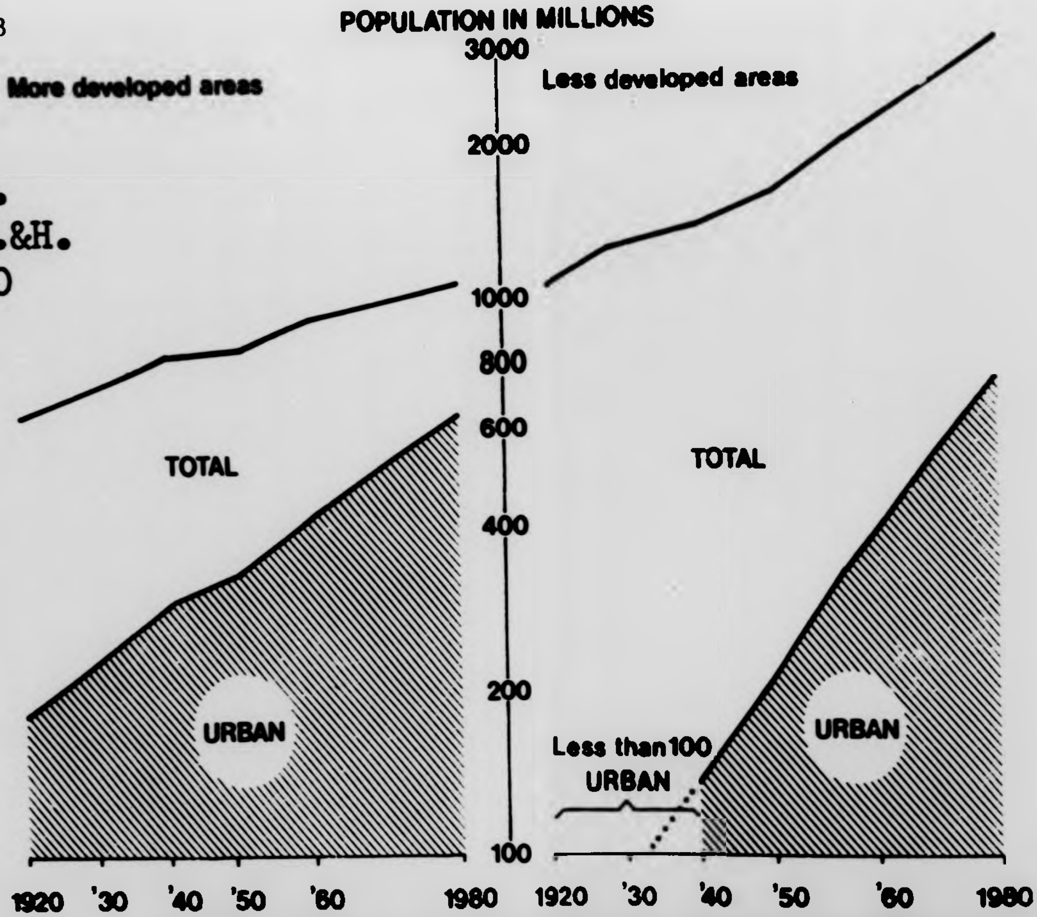


Trends and crude projections of total and urban populations.

(6) Systems of Health Care.

Many developing countries have adopted the type of health services that exist in the technically more advanced countries, and have not adapted these services to their own special local circumstances. WILLIAMS (1955) stressed this when she said "The child care services in Britain have resulted as a process of growth. Although they are in some ways clumsy and expensive they have constructed what is now an effective machine; but it is unreasonable to think that this machine will work in other climes". If these child care services to which she refers are to work in developing countries, because of the differences that exist in the disease patterns, health resources and medical care between the developed and developing countries, those services would have to undergo modifications to meet the needs of these populations.

In the developing countries one often meets on the one hand well equipped and staffed 'Well Baby Clinics' at health centres or hospitals devoting all its time to a few healthy babies while on the other, a nearby hospital may have a out patient clinic which is over crowded, poorly staffed and having to attend to the needs of not only the sick children but also the adults. A mother in such circumstances may be uncertain as to which of the above clinics she should take her child to. Is the child ill enough to be taken to the out patients department to join a long queue of adults and children or is the child well enough to be taken to the Well Baby Clinic? If she decided to take her child to the Well Baby Clinic and subsequently it is found at the clinic that the child is ill then she would be unable to obtain any treatment for this at the clinic. On the other hand if she takes her child to the out patient department of the hospital, then her child would not be able to have any preventive care such as immunisation or nutrition education. The mother may need at some time or another the services available at both clinics, By combining curative with preventive care in the Under Fives Clinic the mother is saved this difficult decision.

Women in rural Africa have a very heavy work load. They not only take care of the home and the children but also have to prepare meals for the family, collect water and fetch firewood and may be called upon to help their husbands in the fields. JELLIFFE (1967) states "the over-burdened, over-worked village mother cannot be expected to carry her healthy three month old baby to one type of clinic, and, at quite another time and place, try to solve the considerable problem of transporting her heavier, barely walking ailing pre-school child to the hospital outpatients".

The concept of the Under Fives Clinic was evolved from the awareness of several important factors which existed in the non-industrialised countries, but not, for example, in Britain and other industrialised countries. JELLIFFE (1966) states "Once again Dr. Morley's Under Fives Clinic is one model to go by, and a good example of the way to apply a completely logical and intensely practical methodology to a particular situation in tropical practice. The use of locally trained village girls, the weight chart he developed, its possession by the mother, the way in which the nurse herself dispenses the medicines, the use of the ladle, the use of sulpha dimidine all the details of this very successful clinic, be they minutiae or not - this is what is meant by practical methodology adapted to this particular situation". By a clinic such as this an adequate service meeting both 'demand' and 'need' of the community could be provided. In the Under Fives Clinic the health worker is able to provide a package of health care to the mother and child with the resources that are available. Every child she sees will get some preventive and some curative care.

C. UNDER FIVES CLINIC PATTERN.

(1) Objectives.

MORLEY (1963) in setting up the first Under Fives Clinic defined its objectives as follows:

It was (a) To provide simple acceptable treatment for the diseases commonly found in the area of the clinic, e.g. Pneumonia, diarrhoea and skin conditions.

(b) To prevent malnutrition, Malaria, Pertussis, Smallpox, Tuberculosis and Measles.

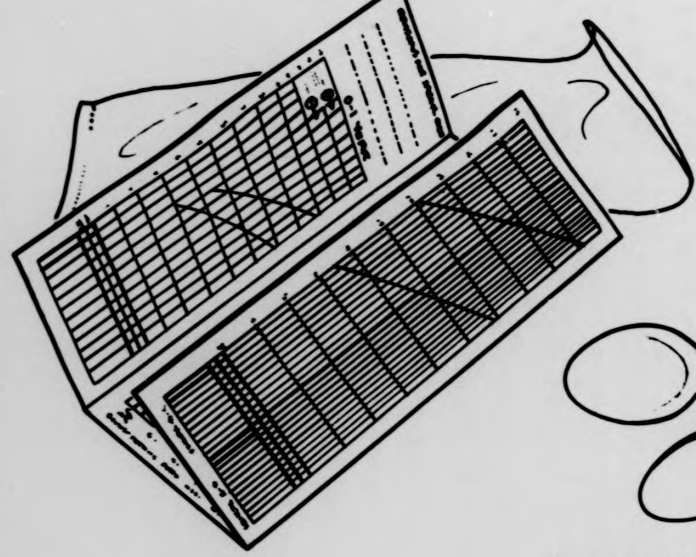
(c) To regularly supervise the health of all children up to the age of five, with special emphasis on their physical progress nutrition and immunisation. By regular supervision is meant, that the child should visit the clinic ideally once a month in the first year and once every three months up to the age of five. The Under Fives Clinic was designed for the pre-school child who is at an age when it is most susceptible to infection and malnutrition. The name of the clinic probably arose more by accident than design. It is not intended to be exclusively for children under the age of five, or to be separate from other services. Clearly the child under five has particular priorities. In some countries the child may be seen up to the age of six. In some areas these clinics are called "Young Child Clinics".

(2) Clinic routine.

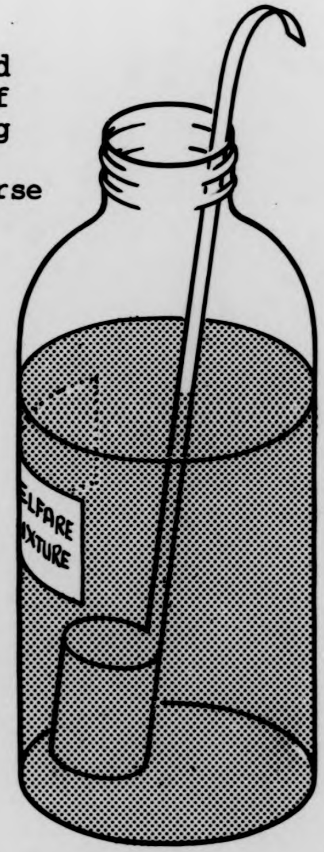
At the clinic a mother would only regularly see three clinic workers. A clerk, who would register the number on her child's card, and stamp the date; a second clerk who would

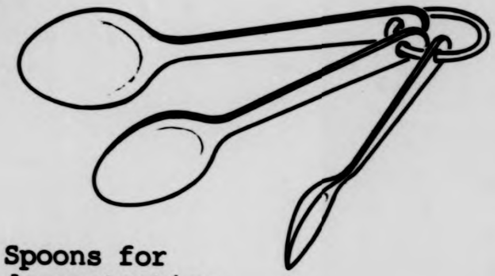
FIG 4

The Road To Health Chart which
is central to 'Under 5' clinics



Simplified
methods of
dispensing
medicine
by the nurse



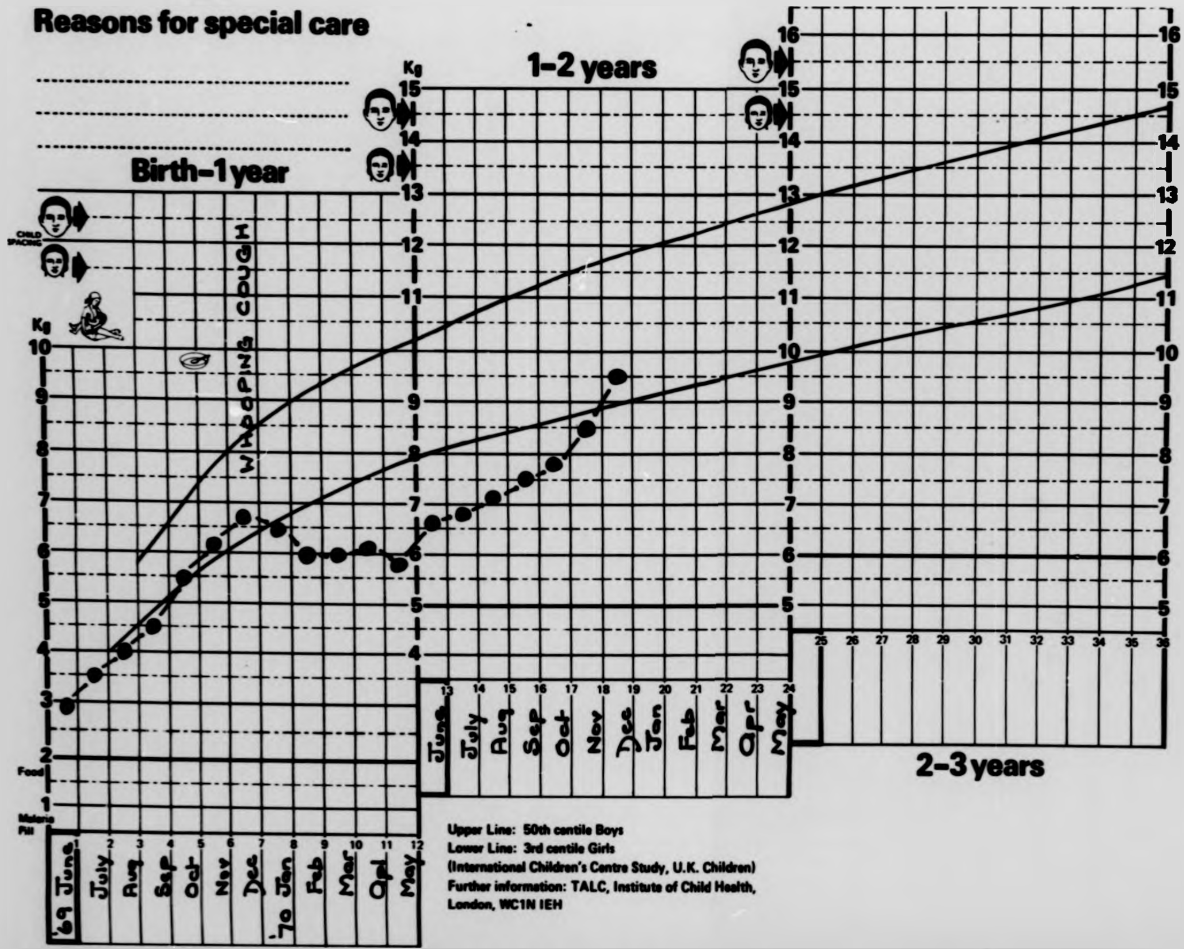


Spoons for
demonstration

weigh the child and record the weight on the child's weight chart; and finally the nurse who would examine the child and supply any medicine the child would need. This nurse would (FIG 4) have a supply of the commonly used drugs (pre packed tablets and mixtures already made up). If the child should need immunisation then the mother would proceed to the immunisation room. While a child is being seen and examined by the nurse, six or seven mothers are in the room with their children waiting their turn to be seen by the nurse. This arrangement ensures that these mothers not only learn from the nurse when she is attending to their own children but also learn by overhearing. In addition to the teaching the mothers receive from the nurse, other forms of health education are carried out at the clinic. In the waiting room while the mothers wait to see the nurse, a member of the staff speaks to these mothers on topics relevant to maternal and child health. These lectures include topics such as breast feeding, ante natal care and its importance, infectious diseases and their spread, immunisations, good sanitation; group discussion is encouraged. In the field of nutrition education, practical demonstrations are held in various aspects of menu planning and food preparation. Often a mother from the audience is picked out to be the group leader. She carries out the food demonstration under the guidance of the health worker.

A doctor would also be in attendance at the clinic. Approximately 10% of all cases would be referred to the doctor.

FIG 5 ROAD TO HEALTH CARD



(3) <u>Growth Chart or a 'Road-to-Health' Card</u>. (Fig. 5)

To assess the progress of the children who attend the Under Fives Clinic it was necessary to devise a simple record card. A special record known as the 'Road-to-Health' Card was designed for this purpose. These cards were first used in Ilesha, Nigeria in 1959, but have undergone considerable modification since then. As well as acting as a record this card is also used to introduce or extend the following two principles of health care. MORLEY (1973c).

1. Children need to receive continuous comprehensive health care. Each illness episode should not be treated as a separate entity as is the case seen in most outpatient clinics. The 'Road-to-Health' card acts as a record of the child's health and progress for a period of five years.

2. 'Promotion of adequate growth' in a child. This also reflects a more effective approach to the control of malnutrition in the community. In children retardation of growth is the earliest and most sensitive indication of impending malnutrition, and up to the age of five years failure to gain in weight is particularly informative. As much as persistant loss of weight is a sign of malnutrition increase in the rate of weight gain can be considered as evidence of good health or recovery from ill health.

The card provides space for plotting serial weights on a chart so that a child's weight can easily be compared with what would be expected for his age. The 'Road-to-Health' card has two reference lines of growth. According to MORLEY (1973d) the most useful lines to have for use by medical auxillaries are as follows:

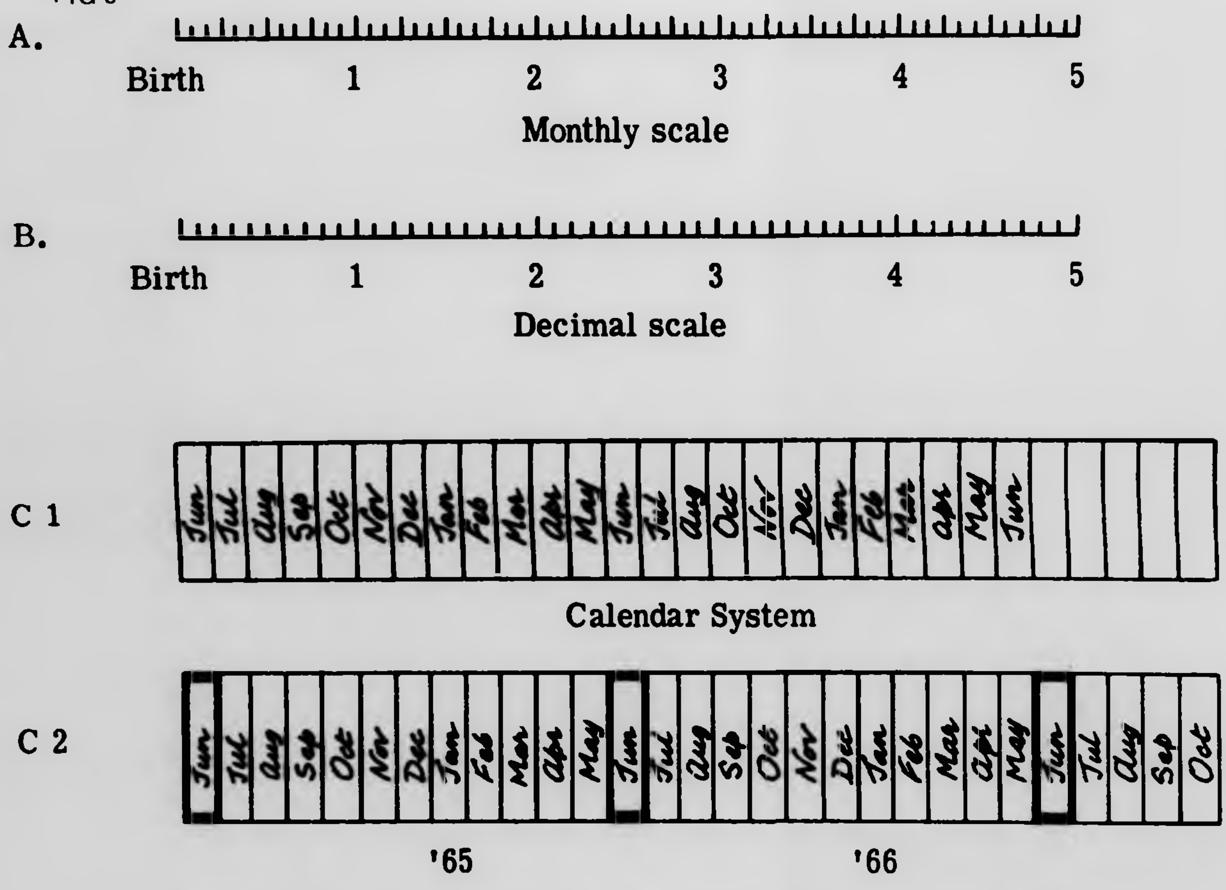
The lower line should represent the median weight for age for children in the villages of the country concerned, i.e. these children would be assumed to have come from poor social class and have lower than expected weights for age. The upper line should represent the median weights for children from a upper social class for example the children of the local university staff living on the university campus. The parents of these children have both the knowledge and the means to feed their children well and are also able to give them good medical care. Assuming a similar genetic background, differences between these two lines represent the deficiencies due to environmental factors particularly poor nutrition and frequent infection, of the village children.

At an international meeting it was decided, that, as so few countries had such figures available, and as they are likely to vary from time to time in each country, that it was more reasonable to have an international standard. For this reason the upper line is now taken as the 50th percentile of a large group of normal children and the lower line the 3rd percentile of the same group of children. The figures for this group are those recommended by TANNER AND WHITEHOUSE (1973). The present weight charts use these lines. In practice these figures were found to be similar to those used on previous weight charts. In particular they are similar to the Harvard mean and 80% Harvard mean used by some workers. NELSON (1966)

The health worker is taught that the objective should be to endeavour to improve nutritional status and thereby the weights of the children, so that their weight curves run parallel to these lines, and as many as possible above the lower line. This would mean an attempt to bring village children of lower weights, and therefore likely to be less well nourished, up to the level of the more fortunate children. However it should be stressed that whatever standards are used the most important aspect should be the direction of the child's curve rather than the exact position of it in relation to the given standards at any point in time. Within a community the variations in weight due to genetic reasons could be appreciable. Therefore it is impossible to suggest what is a "normal" curve, and that where we have malnourished communities, the difference in the weights between these communities and the well nourished may not be as large as the genetic variation in either. MORLEY (1973e) has compared weight percentile for a group of Nigerial boys and English boys. He concludes that the variation within the English group which is largely genetic, is much greater than the variation between the groups which is largely nutritional.

The chart has been produced in various designs over the last fifteen years. At present the chart is printed in green on a primrose yellow coloured strong card. These colours show up well and entries made on them in ink or with a ball point pen can be clearly seen. In the previous designs of the charts weights were recorded against the child's age given in months or in fractions of a year. This entailed the calculation

FIG 6



CALENDAR SYSTEM WITH BIRTH MONTH EMPHASISED of the age by the nurse or the clerk and sometimes resulted in mathematical errors. This problem was overcome by the introduction of the calender system which consisted of writing the months of the year starting with the month of the child's birth along the bottom line of chart (Figure 6c). This avoids the necessity to calculate the age of the child at each visit to the clinic thus saving time, and minimising possible errors when plotting weight for age.

The 'Road-to-Health' card also has specific records of other relevant items of information such as details of major illnesses that are likely to affect growth, birth intervals, low birth weights and twins. This information assists the clinic nurse to recognise the "at risk" child. The term "at risk" child is used for the children who are more susceptible to infections and growth retardation, due to social or economic factors).

Another important feature of the 'Road-to-Health' card is that it is kept at home by the parents and is brought out each time the child attends the clinic. The parents are encouraged to consider the card as a valuable piece of their own property which is important to the health of the child. Parental retention of the card is important because it is essential to obtain parental participation in promoting the health of the children. For this reason it is useful to have cards in the major local languages so that literate parents could read and understand them. At present the cards are available in over 20 languages. The chart is printed on strong card, is about 25 cms by 10 cms when folded and is kept in a heavy quality open ended polythene cover for protection. These features increase the durability of the card.

"Parent retained cards" provide a economical method of having a continuous record of a child. In developing countries adequate record filing facilities for out patients records is usually absent. Maintaining records for more than five thousand persons where identification of people by name is not clear cut, can be both difficult and expensive both in personnel and waiting time for the children. HEALTH CARE OF CHILDREN UNDER FIVE (1973). Reporting from Malawi COLE KING (1971) states "Duplicate individual records kept at Under Fives Clinics have proved impracticable. It was time consuming for the limited staff, who often had to spend considerable time searching for records while patients had to wait, and frequently the records were completely mislaid. It took one staff member one half day after the clinic to sort out the records". Patients find that they get seen and treated faster when they have the card in their hands than when without it and to them it is a "passport to health services".

The mobility of rural people in developing countries has increased remarkedly in the past few years. WYON AND GORDON (1971) showed that in a study in Punjab villages in India 80% of mothers went away from their husbands home for the birth of their first baby. They usually stayed away while they breast fed the baby. If the child's health record is kept by the parents and carried with them, in the event of the child seeking treatment at any institution then the health worker who sees the child would have all the relevant details of the child to aid him.

(4) Research involving home based records.

Another important use of the home based records is that in community evaluation studies, of the use being made of the clinic, the card can prove invaluable in identifying those children who attend the clinic from those who do not attend. It is in this area that the present study is breaking new ground. As the cards are held by the community, resources available within the community can be utilised to analyse the health care provided. In the absence of such home based records it would prove difficult to obtain reliable information on for example the immunisation status of some sections of the population.

(5) Evaluation of Under Fives Clinics.

Need for evaluation.

"Evaluation Research is concerned with determining how well an action programme has succeeded in meeting its stated goal, by applying the methods of Social Science Research" WEISS (1972).

If we wish to approach the health problems of pre-school children rationally rather than arbitrarily or blindly and eventually determine whether our remedial efforts are producing the desired results then objective evaluation is essential. It is essential for intelligent programme planning, and no less essential for programme follow up. WRAY (1968) stated "Community based data demonstrate the gravity and magnitude of a problem, in this case the problem of health, and this information would be beneficial to the decision maker of all kinds, whether they be health planners or economic policy makers. No scientist in a laboratory carries out an experiment and then ignores the results. No responsible physician initiates therapy in a patient and then goes off and leaves him ignoring the effects of the therapy".

COCHRANE (1971) has stressed the need for "effectiveness and efficiency" in the provision of health care. He discusses the problems that have arisen by the use in medical work of practices that have not been fully evaluated.

Clinic based child health services can be evaluated in many ways. The majority of evaluation studies carried out have concentrated on collecting information on mortality and morbidity figures obtained from those who utilised the services. The Under Fives Clinics were first established in 1959 and their main objectives were given on page 35. Since then many changes have taken place in the organisation and the structure of these clinics. Literature contains many articles stressing the needs and the benefits of these modifications. However, much less information is available on assessment of programme effectiveness. In the evaluation of Under Fives Clinics two types of studies are possible.

1. Longitudinal. In this type of study baseline data on the population are collected prior to the implementation of the factors which could bring about a change. The population is then studied after a period of time during which the project was in operation. Any changes beneficial or otherwise attributable to the project are studied. A longitudinal study

has been defined by BENJAMIN (1968) as a "carefully controlled follow up of a group of 'healthy' persons of well defined social characteristics, in whom the emergence of disease can be closely observed and recorded in its detailed presentation, and in proper relation to biological and external environmental factors, which may be involved in causation, the rate of development, or in the possibility of reversion".

In the context of the Under Fives Clinic, a longitudinal study could take the following form. Baseline data (including health, socio-economic) are obtained from a geographically defined area. An Under Fives Clinic is organised in this area at an easily accessible location. The functions of the clinic are clearly explained to the community, and they are encouraged to bring their children regularly to the clinic. After a period of time, say three years, another field survey is carried out. The same social,health and economic data are evaluated. It is established if the presence of the clinic has had any beneficial or other effect on the community. In drawing conclusions one must also take into account other factors that might come into operation at the same time as the Under Fives Clinic, e.g. improvement in sanitation in the village.

A variation on the longitudinal type study is the controlled Trial. In this type of study two areas are chosen having similar climatic,economical,cultural and health patterns. Into one area is introduced the Under Fives Clinic and no child health services are introduced to the other. Having obtained baseline data for both areas before the start of the Under Fives Clinic a survey is carried out after the clinic has been in operation for a known length of time to see if the health and the disease patterns in the two areas have changed significantly.

2. <u>Point Prevalence study</u>. At a given point in time after the project has been in operation for a known length of time, a study could be made on a group of the population affected by the project and compared with a control group from the same environment not affected by the project.

(a) <u>Evaluation studies done prior to the present study</u>.

A modification of the 'controlled trial' type study was carried out by CUNNINGHAM (1969) in Nigeria. He carried out a comparative study of two villages in the Western State of Nigeria. He compared Imesi-Ile with a neighbouring village Oke-Imesi. The former village had a well established Under Fives Clinic while the latter had the traditional welfare centre and a dispensary.

TABLE 7.

VILLAGE PROFILES: IMESI-ILE AND OKE-IMESI (1967)

CUNNINGHAM (1969)

Environmental and life style	Imesi-Ile (study village)	Oke-Imesi (Control)
Population	6,200	7,200
Persons/house ratio	7.9	7.9
Percentage of houses cemented	5.7	56
Water supply	Streams	Piped (since 1966)
Staple foods	Yams, gari, eko, rice, beans	Yams, gari, amala, rice, eko.
Cash crops	Yams, cocoa, kola, cotton	Rice, yams, cocoa
School students	1,568	1,352
Seamstresses	24	47
Tailors	19	26
Palm wineries	16	29

The comparative study was carried out over a period of one year in August 1966 to August 1967. These profiles show considerable similarity in the villages; the control village however has the advantage of pipe borne water supply and a greater proportion of cemented houses, suggesting greater wealth. The large number of school students in the study village was related to a well established high school in the area. The health statistics collected by Cunningham during this year are given in Table 8

TABLE 8.

CHILD MORTALITY IN IMESI-ILE AND OKE-IMESI

(AUGUST 1966 - AUGUST 1967)

	Imesi-Ile Under Fives' Clinic	CUNNINGHAM (1969) Oke-Imesi 'Welfare' Clinic.
Live births	302	327
Infant deaths	14	26
Infant Mortality rate/1,000 live births	46	80
Child 1 - 4 population (estimated mid year)	896	997
Child deaths 1 - 4 years	16	48
Child 1 - 4 mortality rate (per 1,000 children 1 - 4)	18	48
Malaria parasite rate (positive films)	15.5%	55.0%
Malaria	holoendemic	holoendemic

The above Table demonstrates remarkable differences between the Infant Mortality Rates in the test and control villages. If the total 1 - 4 year mortality is considered it is seen that in the control village the death rate is three times that found in the study village, and the Infant Mortality Rate in the control village is almost twice that found in the study village. Among the survivors there were also some demonstrable differences. To illustrate these differences each childs weight has been expressed as a percentage of the standard weight for age (using standards set by NELSON (1966) for a child of the same sex and age). A percentage of the ideal weight for age of the median child in each age and sex group is compared for the two villages. (Table 9)

TABLE 9.

MEDIAN PERCENTAGE OF STANDARD WEIGHT FOR AGE AND SEX FOR GROUP OF CHILDREN 0 - 4 YEARS IN IMESI-ILE AND OKE-IMESI (1966)

	Median % of standard weight for age					
	Boys			Girls		
Age in months	Imesi-Ile	Oke-Imesi	Difference	Imesi-Ile	Oke-Imesi	Difference
0 - 5	92.0	92.2	-0.2	90.0	93.4	-3.4
6 - 11	84.5	84.3	+0.2	85.0	77.8	+7.2
12 - 23	82.0	78.9	+3.1	80.8	76.2	+4.6
24 - 35	83.6	81.1	+2.5	83.8	78.9	+4.9
36 - 47	83.9	81.5	+2.4	79.0	78.6	+0.3
48 - 60	82.5	80.3	+2.2	80.9	77.6	+3.3

Though babies from the study village where an Under Fives Clinic was established were found to be lighter for the first six months of life, thereafter they rose ahead of the Oke-Imesi (Control) village children. The difference is most evident in the second year of life and most marked in girls. (Table 9). In spite of the apparent greater wealth and the pipe borne water supply of the control village there was as shown above a considerable improvement in the health of the children in the study village.

WEBB (1969) carried out a study to evaluate the Under Fives Clinic in Ilesha in Western Nigeria. She used home based 'Road-to-Health' cards for obtaining a variety of baseline data on the health of the children in the community. In this study data were collected to determine immunisation status, weights of children at various ages and some other details. The study was carried out as follows:

From a map of the town of Ilesha, six areas at specified distances from the clinic were selected. In each area using a specified routine twenty one houses were visited. The survey was carried out using an interviewer administered questionnaire. In each house visited every child under the age of five was taken into the survey. A total of 235 children were included in the survey. Results of this study were not published and as such it has not been possible to draw any conclusions from the study.

(b) Studies carried out after the present study.

DE WINTER (1972) describes a controlled trial type longitudinal study carried out to measure any improvements to the health of a rural community which may arise as a result of the introduction of "Health centre methods, especially Under Fives Clinics, health education, home visits and community development methods in their various forms". The basic principle of the project was to deliver the above type of health centre services to a 'test village' in Nkhata Bay District of the Northern Region of Malawi. The 'control' village would not receive these facilities. The test and control villages were chosen to be close to the local hospital. Basic demographic data were obtained for both villages. The villages had similar population structure and the age and sex ratio were compatible. It was found that the morbidity patterns for the two villages were similar. A study of the inpatients and out patients records of the nearby hospital was made for two eighteen month periods starting from March 1966. The addresses of the patients were noted and compared. These records did not show any obvious difference. The agricultural and nutritional pattern of the two villages were similar. The health services available to the two villages were identical prior to the start of the project.

Sociological and medical data were obtained for the test village but the sociological survey was not carried out in the control village. This was mainly 'due to the lack of staff' but as the author points out it was wrongly assumed that the sociological baseline survey would not be necessary in the control village. Sociological information included ownership of property, occupation of the head of the household, sources of income, education levels of children, education levels of parents, housing conditions, livestock kept, nutrition knowledge, food production and consumption, and child care practises. Medical information included age and sex, prevalence of abnormalities and illnesses, and clinical findings. The same items of information were obtained for the test and control villages, in the baseline and evaluation surveys. Some items were however included only in the baseline survey, i.e. merely in order to collect information about the villages without intending to use these items as a measure of progress. Some items of information collected in the baseline survey were later discarded as they were found to be irrelevant. On the other hand some questions that could be beneficially used as parameters of progress were only thought of during the course of the study. The finding of the medical baseline data constituted the starting point of the actual project, in that they described the extent and the type of illness in the villages.

The health care provided to the test village comprised -

A weekly lecture or health discussion

A general out patient clinic (held weekly and conducted by the medical assistant)

A weekly Under Fives Clinic (conducted by the State Registered Nurse initially but later by a midwife)

A weekly ante natal clinic (conducted by the midwife)

Home visiting

Evaluation surveys were carried out in the two villages two years after the health project was in operation at the test village. Evaluation was based on fifty three families in the test village and fifty families in the control village, who were included in the sociological survey. The evaluation of the medical surveys was based on 115 individuals in the test village and seventy five in the control village, who were included in both baseline and evaluation) surveys. The results could be summarised as follows:

Sociological evaluation in the test village showed that more families had improved than deteriorated, although this was not a statistically significant difference. However if the social conditions of the two villages at the time of the sociological evaluation are compared one hardly finds any difference between the two. It is reasonable to assume that the improvements that occurred in the test village only brought the social conditions of these villages to the level that existed in the control village prior to the start of the survey. i.e. at the start of the survey the social conditions that existed in the control village were better than those in the test village.

In contrast however, the medical survey showed clearly that the proportion of individuals who showed improvement in the test village far exceeded those that showed improvement in the control village.

BORNSTEIN AND KREYSLER (1972) undertook a study to investigate some of the social factors affecting the attendance at the Under Fives Clinic in a densely populated area in Tanzania. Interviews were conducted with eighty mothers of two villages which are in the catchment area of a clinic served weekly by a mobile clinic team. Both villages are situated in the Lushoto District, are approximately of the same size (one hundred families) at the same distance from the clinic (four miles) and of homogenous composition with regards to socio-economic background of the families. One village had access to a clinic for over three years and the other only for ten months. Their results showed little difference in attendance rates and frequency of visits at the old and new clinics. Between 70% and 75% of all mothers with children under five years of age had attended the clinic. The average frequency of visits was four. In one village a greater number of attending mothers had more formal education when compared to the non attending mothers, but apart from this no significant differences were noted in age or education between parents of the two groups. One group found the "ten house all leaders" (elected local representatives), a very useful source of information on clinic matters, while the other group obtained most of its information on clinic activities from neighbours and friends. Significantly the non attending mothers around the newly established clinic had not been informed by the village leaders. Many of the attending mothers went to the clinic on the advice of their husbands and many non attending mothers gave as a reason the disapproval of their husbands. The most appreciated clinic activities were the free distribution of food and medicines whereas health education was not mentioned at all by the mothers. Among the practical problems connected with the attendance, distance and cost were the major ones. The mother spends an average of four hours walking to and from the clinic.

The survey results presented are based on a small sample, within a certain social and geographic context in rural Tanzania. Though the results may not be representative for a larger area, it highlights some of the problems in connection with the perception and use of medical services by rural families.

WOLGEMUTH (1972) carried out a study in Lusaka in 1972 to evaluate the Under Fives Clinics in Zambia. The study took the form of a field and clinic survey. The clinic study, consisted of visiting, one or more times, seven Under Fives Clinics in the Lusaka suburbs. Information was sought from the 'Road-to-Health' cards of the children attending the clinic on the day of the survey. Relevant details on weights and immunisation status were analysed. The field study comprised a house to house survey conducted to acquire some knowledge of the characteristics of the community around the Clinic 1 (i.e. one of the clinics studied in the clinic survey). Mothers living within half a mile from the Clinic 1 were interviewed. The sampling technique was devised with the aid of an aerial map. The township was divided into eight regions and the number of houses per region, and the proportion each region contributed to the entire township was calculated. In this study every other household was visited. It had been originally planned to correlate household income, expenses on food, mothers education, number of living and dead children, positive and negative attitudes towards the clinic with the child's growth. Though 396 mothers were taken into the sample only less than twenty mothers had their child's card available for the interviewer. The author concludes that due to this very low response rate it was not possible to correlate the clinic results with the findings in the field survey. However much information is available on the population that attended the clinic. This information included, age, sex, frequency of clinic attendance and weight for age.

Conclusion

It is seen from the foregoing passages that the evaluation of the uptake of services of an Under Fives Clinic has been only minimally studied. The clinics have now been in existance in some countries in Africa for as long as ten years and it is necessary to evolve a methodology to evaluate these clinics not only for the benefit of the individual clinics but also for the use of health planners involved in policy making. The three studies described above which were carried out after the conducting of the present study do not still provide a repeatable methodology for the evaluation of Under Fives Clinics on a large scale.

CHAPTER II. PURPOSE OF THE PRESENT STUDY.

As shown in the Literature Review (Chapter I) little or no evaluation of Under Fives Clinics has been done. Even those surveys that have attempted evaluation have concentrated in the main on the operational or administrative efficiency of these clinics. Use made by the population of the services has hardly been studied. Little else has been systematically observed or recorded of this form of health care. The parents' attitudes and opinions of the clinic also have been little studied. If this form of health care is to be recommended and accepted as government policy in other developing countries, then information on their effectiveness is needed.

Main objective of study

The main objective was to develop and apply a methodology for the measurement of the utilisation of the services provided by the Under Fives Clinic. At the same time the health of clinic attenders and non attenders would also be measured, in an attempt to see whether attendance at clinic conferred some health benefit.

Subsidiary objectives of the study

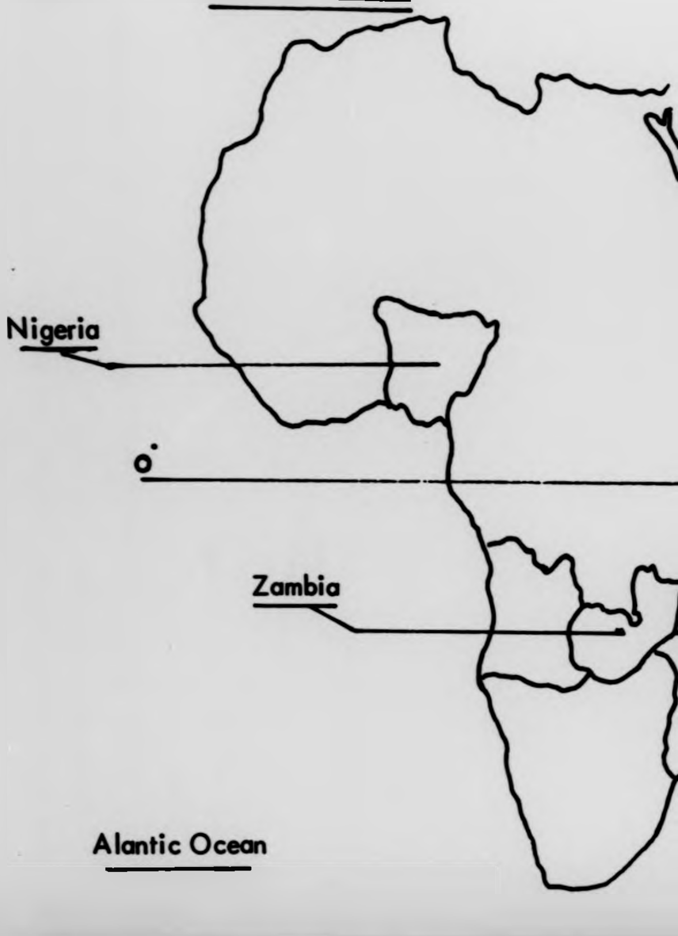
(1) To investigate parents attitudes towards the services provided, i.e. reasons for attending or not attending the clinics.

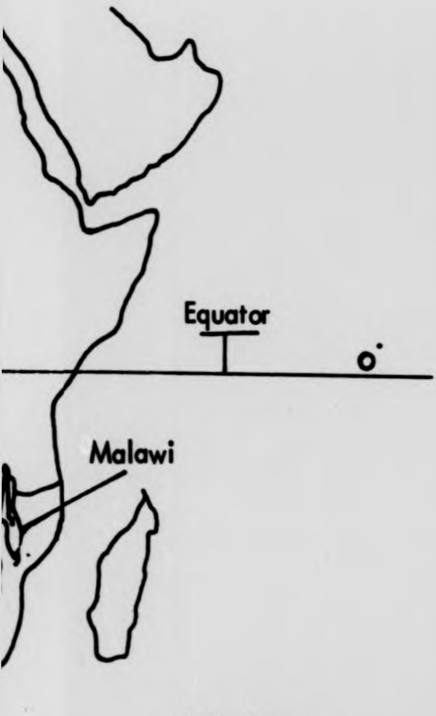
(2) To collect comparative data on the different activities of the clinics, e.g. immunisation, health education and attendances.

The subsidiary and main objectives taken together should help in the future development of methods for the evaluation of Under Fives Clinics.

FIG 7

Map of Africa




Equator
0°
Malawi
India Ocean

CHAPTER III. METHODOLOGY.

A. AREA DESCRIPTION.

(1). Nigeria.

The Federal Republic of Nigeria lies almost at the Eastern end of the broad sweep of the West African coastline and is demarcated by latitudes 4 degrees, and 14 degrees N parallel and longitudes 30 degrees and 15 degrees meridian. Nigeria is bounded on the west north and east by the French speaking republics of Dahomey, Niger and the Cameroons respectively, on the south by the Atlantic occean. Nigeria has an area of 356,669 square miles and though it is the 14th largest African state it is the most populous country on the continent having an estimated population of 64 million. DADA (1972)

Situated well within the tropics Nigeria has a climate which is characterised by relatively high temperatures throughout the year. Temperatures vary from 70°F to 90°F throughout the year. The annual rain fall varies from 150 inches on the coast to 25 inches in the north eastern region. June - September are the rainiest months throughout the country.

Resources.

Although 70,000 square miles of Nigeria are in the forest belt only 9,000 square miles account for most of the timber resources of the country. Nigeria exports a wide range of tropical hardwoods. Cattle, and to a lesser extent sheep constitute important animal resources. Cocoa and ground nuts form the main agricultural produce. Mineral resources are varied, although exploration of many have only just begun. Tin collumbite and iron ore are among those being produced. Fuel resources include sub bituminous coal and petroleum. The latter would become a major source of revenue in the future. Agriculture together with livestock forestry and farming contributed 55.6% of the total Gross National product for 1966 which was £1,583.1 million.

Population.

Although racially negroid the Nigerian population exhibits extreme ethnic diversity. Ten groups notably Hausa, Fulani, Yoruba, Ibo, Kanuri, Tiv, Edo, Nupe, Ibidio and Ijowu account for 80% of the total population. Recent economic development has stimulated considerable rural urban migration and has led to phenomenal growth of such cities as Lagos, Ibadan and Port Harcourt. Nearly 16% of the Nigerian population live in urban areas making the country perhaps the most urbanised in black Africa. MABOGUNJE (1972).

Health Statistics.

The estimated death rate is 20/1,000 and the estimated birth rate 45/1,000 in 1970 and an approximate growth rate of 2.5%. ABOYADE (1972). The estimated mid year population for 1970 was 64,000,000. It is estimated that the number of pre-school children would comprise 25% of this population. DADA (1972).

Nigeria has 2,683 registered medical practitioners, and 13,046 registered nurses and 14,367 registered midwives. A total of 29,789 hospital and health centre beds are available in the country. This gives a population of 24,000 per medical practitioner, 5,000 per nurse, and 4,500 per midwife and 2,100 per hospital bed. The country has four medical schools each with its own teaching hospital and the population per medical school is 16,000,000.

DADA (1972) in a paper entitled guidelines for the development of health manpower and facilities in Nigeria during the 1970 - 1979 decade stated the following

TABLE 10.

	1975	1980
Mid year population estimate	72 million	80 million
Desirable number nursing staff 1/1,000 population	72,000	80,000
Desirable number medical practitioners (1/1,000 population)	7,200	8,000

From the above it is seen that at present (1970) Nigeria has only 20 % and 37 % of the desired number of nurses and medical practitioners. This report gave a list of categories of health personnel requirements for the next decade.

DESCRIPTION OF STUDY AREAS.

(a) ILESHA.

The town of Ilesha (7^{o} 39 N., 4^{o} 38 E.) is situated in the Western region of Nigeria and lies in the rain forest belt of the country. It has a population of about 165,000 and a similar number live in the surrounding villages. The majority of people are Yoruba with farming as the chief occupation on the farms. Yam maize and cassava are the principal food crops while cocoa is grown as a cash crop.

Ilesha town has a pipe borne water supply. The water comes from a stream six feet wide twenty miles away in the Effon Hills. PEARSON (1973).

The town has a 175 bed Mission Hospital (Wesley Guild Hospital) and a Government Hospital.

(b) ESA-OKE.

The village of Esa Oke is situated eighteen miles from the town of Ilesha in the western region of Nigeria. The people here too are in the main farmers. The majority of them are Yoruba.

The village has its own Oba (chief) who is looked upon as the head of the village.

The village has four primary schools and two secondary schools.

The focal point of the village is the market place, situated in close proximity to the Oba's palace and the health centre (where the Under Fives Clinics are held). There are three market days each week. Brisk buying and selling takes place and it is a very colourful sight - as is any African Market place.

No statistics are available on population, age structure, etc. for Esa Oke.

(2) MALAWI.

Malawi formerly known as Nyasaland lies to the South of Tanzania and between Zambia on the West and Mozambique on the South East. In comparison with other African countries Malawi is small occupying 45,747 square miles, of which 36,324 square miles is land the rest being lakes. Malawi has no natural resources and the country's income is derived from the export of tobacco, tea, cotton, ground nuts and other agricultural products. Increasing emphasis is now paid to tourist potential as a source of income.

In 1969 the estimated population was 4.4 million a projection from the 1966 population census. 95% of the population live in rural areas. 43.9% are under fifteen years of age and 19% under five. An annual population increase of 3% is estimated. COLE KING (1971)

50% of the population live in the southern region and there is an overall population density of 111/square mile, one of the highest in the African continent. Malawi's population density is more than four times that of the African Continent as a whole and about half that of Europe. NATIONAL STATISTICAL OFFICE PUBLICATION (1970).

General Morbidity and Vital Statistics.

An estimate of the Infant Mortality rate calculated from the 1966 census was 160/1,000 live births. Total Under Five mortality obtained from retrospective studies was between 30 to 50% according to the district. BHIMA (1970) reported a maternal mortality of 500-1,000 per 100,000 deliveries for Malawi.

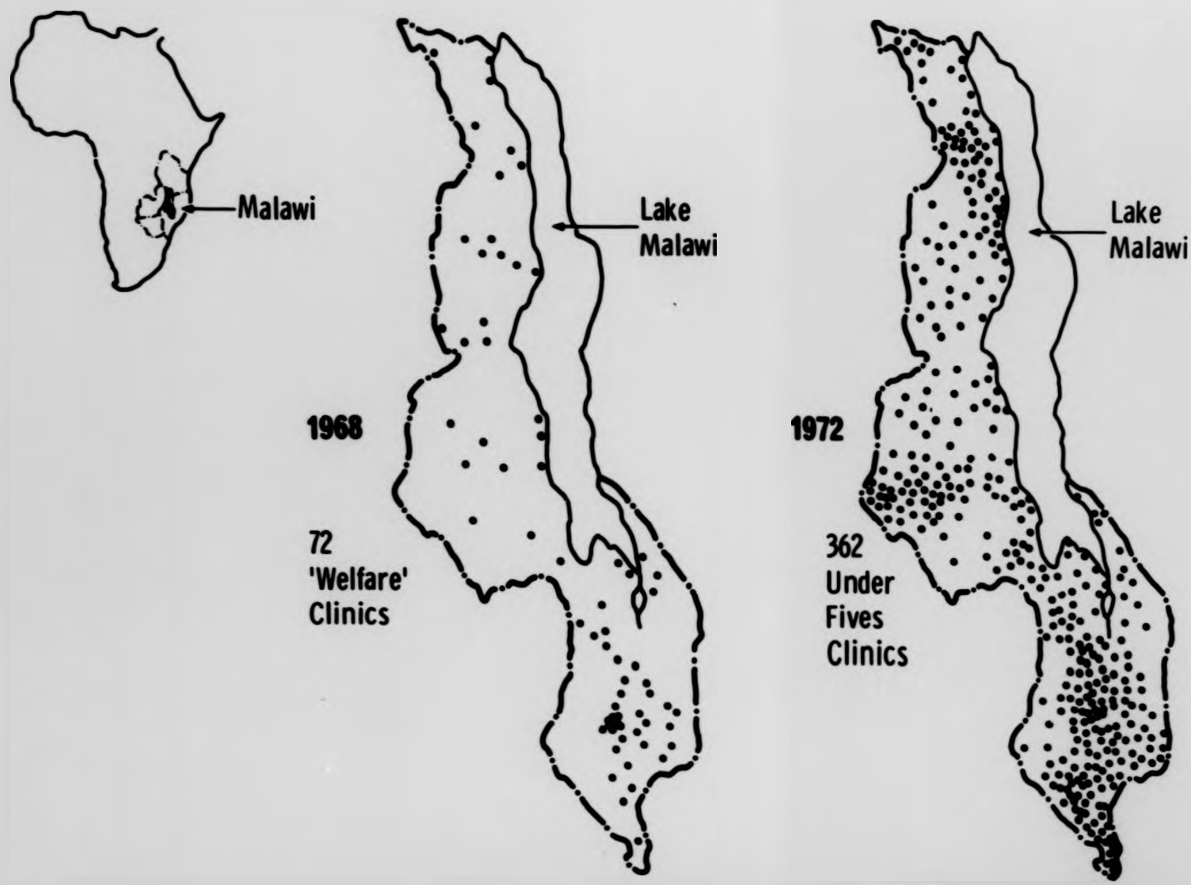
Health Services.

Approximately forty doctors are employed by the Ministry of Health in Malawi of whom more than half are in the three major towns of Blantyre, Zomba and Lilongwe. Another forty are employed by missions or in private practise, giving an overall doctor patient ration of 1-53,000.

The country has three Government Hospitals with 200 - 350 beds, nineteen district hospitals each with 80 - 100 beds, and staffed by a single medical officer, and fifteen rural hospitals each with 12 - 4o beds run by medical assistants. The rural hospitals have no theatre or x-ray facilities and many of them are in fact dispensaries with beds. 3,039 beds are provided by the government and a further 2,552 by missions giving an overall rate of 1.2/1,000 population. KING (1969).

In 1969 only 0.8% of the health budget was spent on preventive services. This constituted almost entirely of some environmental hygiene and smallpox control and were undertaken by a team of health assistants, auxillaries who were trained for two years in sanitation and communicable disease control. At this time personal preventive services for mother and children, immunisation programmes and health education were negligible as there were no staff trained to undertake them. COLE KING (1971) states "73 'Well baby' clinics were held regularly throughout the country but only 17 (23%) were run by the Ministry of Health, the rest being run by Mission and voluntary organisations. Analysis of total attendances showed that they saw 0.5% of the total under five population each week, most of whom were in the 0 - 1 year age group. Little

FIG 8 DEVELOPMENT OF COMPREHENSIVE CHILD CARE SERVICES IN MALAWI



or no health education was carried out at these clinics".

The aim of the Under Fives Clinics programme started in 1969 was to reach 60% of the under fives population in a ten year period. Under Fives Clinics were started in each pre-existing medical unit adding gradually mobile clinics to increase population coverage. At present there are 362 Under Fives Clinics in Malawi. (Figure 8).
The clinics are run by medical auxillaries. The Peace-corp Volunteers working in Malawi helped in the initial organisation of the Under Fives Clinics programme. Supervision of the clinics at Central Government level is the overall responsibility of the Medical Officer in charge of Maternal and Child Health.

(a) NAMITAMBO.

Is a Local Court Area under chief Kade-were in Chiradzulu Sub-district. It has an area of approximately thirty five square miles and lies about twenty five miles south east of Blantyre The altitude rises from about 2,500 feet to the east where it borders on the Palombe plain, to about 2,800 feet westwards as it approaches the Shire Highlands.

The climate as elsewhere in Malawi, consists of a dry cold season from April to August, becoming hotter and drier through the months of September and October until the onset of rain in November. There is then a hot rainy season until March/April during which rains can be heavy.

Total population of Namitambo was 19,197 when the 1966 census was taken, and it is one of the most densely populated areas of Malawi having a population density of 500/ square mile BURGESS AND COLE KING (1969)

The main occupation is subsistence agriculture, but there are a few Migrant Workers either in Malawi or in Rhodesia or South Africa.

The people are primarily of the Lomwe tribe but there are some Yao and a few Nyanjo.

The area is served by one rural health centre at Namitambo Trading Centre, and consists of an out patient clinic and a twelve bedded Maternity Unit. The Under Fives Clinic is held at the Rural Health Centre.

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(3) ZAMBIA.

Zambia an independent republic within the Commonwealth since 1964, occupies tropical high plateau country in South central Africa. Gently undulating plateau, mostly between 900 - 1,500 metres mean sea level and separated by gentle slopes or dissected escarpment zones dominate the scenery. Three quarters of Zambia drain to the Zambezi. From the Barotze flood plain the river flows south and then east along the Rhodesian border, plunging over the Victoria falls to enter th gorge section now largely occupied by the 274 km man made lake Kariba, the dam of which supplies most of the countries electricity. Important plateau features of Zambia are the dambos - shallow linear moisture retaining concavities that provide dry season water and thus influence rural settlement patterns. Zambia with a high rural population has as its basic resources land - most of which is still cultivated traditionally. Copper however totally dominated the mining and national economy accounting in 1969 for 97% of domestic exports and 52% of net domestic products. Zambia is the world's third largest copper producer. DAVIS (1972).

Zambia is divided into eight provinces and the capital city is Lusaka.

Population.

According to the 1969 census figures 4,057,012 people occupied some 290,000 square miles at an average density of square mile (see page 77 for population breakdown by age for Zambia for 1969). A third of the population live in the urban centres. The largest being in Lusaka (estimated population

250,000) Kitwe and Ndola. With rising expectations the larger centres are growing too quickly through migration, and mushrooming peri-urban shanty settlements indicate growing social problems for the rural migrants. They lack the skill for urban jobs even where these are available. 98% of the people are African but divided by many tribal groups and tongues of the Bantu group.

"As in most other developing countries Zambia too did not till fairly recently have legislation to make registration of births and deaths compulsory. The amendment of the Births and Deaths registration Act in 1972 made it possible for all races to be registered under the Act. Before this the provision of the Act referred to foreigners. Its effectiveness has still to be seen, but it is a step in the right direction. In future it is hoped that our vital statistics will be more meaningful and reliable". NALUMANGO (1974).

Organisation of health services.

A cabinet minister heads the Ministry of Health and is responsible for policy decisions and political direction of the health services. He has a minister of state under him, the Permanent Secretary and Director of Medical Services. An assistant director of medical services in charge of preventive services also incorporates the Maternal and Child Health Services. The Maternal and Child Health Services are under the direction of a Specialist Medical Officer attached to headquarters. He is assisted by a Senior Public Health Nurse. At the periphery Provincial Medical Officers are responsible for the development of services in each province assisted in five out of the eight provinces by a Public Health nurse. At present

16 Public Health Nurses and health visitors

41 Community nurses.

25 Nutrition demonstrators of the Ministry of Health and Dutch, Danish and Swedish volunteers

14 Zambia enrolled nurses of local authorities,

are engaged in Maternal and Health activities. The work consists of providing ante natal and post natal care to mothers and care of infants and pre-school children at Government Mission and Mines Health Institutions. Except in some urban areas no home visiting is done by Public Health staff and no domiciliary midwifery has yet been developed even in the urban areas. Infants and children up to the age of five years are provided care at the Under Fives Clinic. Since 1967 great emphasis has been placed on the establishment of these clinics which have now grown rapidly from thirty six in that year to 1,000 in 1973.

Health Economy.

Due to her natural resources, Zambia is one of the richest countries in Africa. In 1963-64 the recurrent revenue was 63,718,000 Kwachas and rose to 306,111,000 Kwachas - £112,240,700 in 1968. For the same period health expenditure rose from 3,038,800 Kwacha or £1,420,000 to 14,788,000 Kwachas to £6,901,534. (This is about 5% of the recurrent revenue) With a population of 4.16 million this works out to 3 Kwacha or £1.40 or $3.75 per head per hear for health. GERVAIS (1973)

Description of study area.

(a) Mansa is the administrative capital of Luapula Province. The 1969 census showed a population of 352,000 for Luapula Province. The population of Mansa is estimated at 6,000. The principal occupation in this area is subsistence farming. Cassava, maize and rice are the main crops.

The majority of people speak Bemba.

Luapula Province is geographically situated near the Copper belt. However, by road one has to cross the Congo pedicle in order to reach the Copper belt. This situation has been partly responsible for the slow development of the towns in Luapula Province.

TABLE 11.

UNDER FIVES CLINICS IN ZAMBIA (GOVERNMENT MISSION AND MINE UNITS) 1970 - 1972 NALUMANGO (1974)

Year	Main Clinics	Sub Clinics	Total
1970	312	295	607
1971	413	327	740
1972	503	448	951

Remarks -

(1) Figures for 1972 are provisional.

(2) In addition to clinics included in Table 11 municipalities run their own clinics. In 1971 and 1972 numbers of such clinics were thirty nine and forty respectively.

(3) Main clinics run a daily Under Fives Clinic while Sub clinics run an Under Fives Clinic weekly, fortnightly or monthly.

TABLE 12.

REPORTED POPULATION OF ZAMBIA WITH DETAILED BREAKDOWN OF AGE-GROUPS UNDER 15. POPULATION CENSUS 1969.

Age groups (Years)	Males and Females (Numbers)	Percentage of age Classified population %
0	139,935	3.49
1	170,746	4.25
2	155,650	3.88
3	143,466	3.57
4	139,253	3.47
1 - 4	749,031	18.66
5	150,446	3.75
6	135,668	3.38
7	129,375	3.22
8	113,934	2.84
9	122,049	3.04
5 - 9	651,472	16.23
10	110,804	2.76
11	96,917	2.41
12	95,035	2.37
13	81,807	2.04
14	73,767	1.84
10 - 14	458,330	11.42
15 - 24	678,330	16.90
25 - 34	545,319	13.59
35 - 44	409,250	10.20
15 - 44	1,632,899	40.68
45 and over	522,024	13.01
Total	4,013,754	100.00
Unspecified age	43,258	
All ages	4,057,012	

Remarks - (1) The census took place in August 1969. Hence the population recorded as 0 years was born in 1969, and is approximately 2/3 of the true population under 1 year of age. (2) The number in individual age groups are unreliable due to difficulties in specifying age at the time of enumeration.

METHODOLOGY.

B. FIELD STUDY.

(1) Preparation.

The survey was discussed and agreed on by the administrators and Health authorities of all three countries, i.e. Nigeria, Malawi and Zambia. In the selection of study areas one of the first considerations was to find suitable health leaders for each area to act as principal organiser and assume responsibility for the logistics of the field study.

For these reasons Ilesha (Nigeria), Esa Oke (Nigeria) Namitambo (Malawi) and Mansa (Zambia) were chosen. Each of these areas had an already existing Under Fives Clinic and it was decided to draw the sample for the field study from the community that lived at varying distances from the clinic. The clinic study comprised gathering information from the above-named clinics.

At village level permission was sought from the headman or chief of the area. Co-operation was very forthcoming.

(2) Sampling Technique.

In sample surveys the sampling techniques that are employed must be such that they fulfil the objectives of the survey and also meet the statistical requirements. FOOD AND AGRICULTURAL ORGANISATION REPORT (1949) advises "In all surveys sampling must be planned in advance, with the help of a competent statistician. The sampling technique must be reduced to simple terms for the field investigators. For example in the family surveys the investigator must be given the address of the family to be visited or instructions to survey every second or third house, in a given street etc. They should also know how to seek substitutes for households which refuse to co-operate in such a way that the sample remains unbiased".

In the planning stage of the present study these principles were observed. In this study the sampling unit was the dwelling. Every child under the age of five who slept in the dwelling the previous night was taken into the survey whether he was a clinic attender or not. In developing countries distance is a critical determinant of uptake of medical care, and it was realised that those that live close to a medical centre can derive more benefit from these services. For example in Kenya it was found that 40% of out patients attending the health centre lived within five miles from the clinic, and 30% between five and ten miles from it.- FENDALL (1965). In the present study it was decided to see what part distance played in the utilisation of facilities of an Under Fives Clinic. It was decided to sample a population living at distances of ½, 1, 1½, 2 and 2½ miles from the clinic. However it was not possible to obtain a census therefore stratified random sampling of children was not attempted. Multi occupation in dwellings is a common feature in West Africa. If a family was chosen as the sampling unit then a list of families stratified by distance would be required. And this was highly unlikely for all the areas studied. Further even if such a list of families was available, in randomising, some families in a dwelling would be included while other families within the same dwelling excluded. This would lead to a difficult situation, and cause unpleasantness between the investigators and the occupants. Further though dwellings were used as the sampling unit classical random sampling could not be carried out due to the non availability of a list of dwellings in each area, with their addresses and their distances from the clinic. Thus the only reasonable method was to employ the one used in this investigation. On a map of the area, the clinic was identified and used as the starting point. Figure 9 (a). A grid was constructed on the map by drawing circles of radii equal to $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic. FIGURE 9 (b) These circles were further divided into sectors by drawing two lines North South and East West FIGURE 9 (c). Each of the sectors so produced were further subdivided by a line bisecting the circumference of each sector. FIGURE . 9 (d). The mid point in each sector X was the starting point of the field survey in each sector. The street nearest this point was selected on the map. Once the street was identified, and the starting point was noted, then travelling from this point in a direction away from the clinic every dwelling on the left hand side of the road, having its front door facing the street was included in the survey. Buildings not visited included schools, churches, huts with only three walls, and derelect buildings with no roof. Buildings were included if they had four walls and a roof. Sometimes however these buildings were uninhabited. Many shops were used as places of work only, and these were excluded from the survey. However those shops which had living accommodation attached to them were taken into the survey. If a building was shuttered up then it would be revisited another time. Every dwelling on the left hand side of the street was visited. If the dwelling

FIG. 9

SAMPLING TECHNIQUE

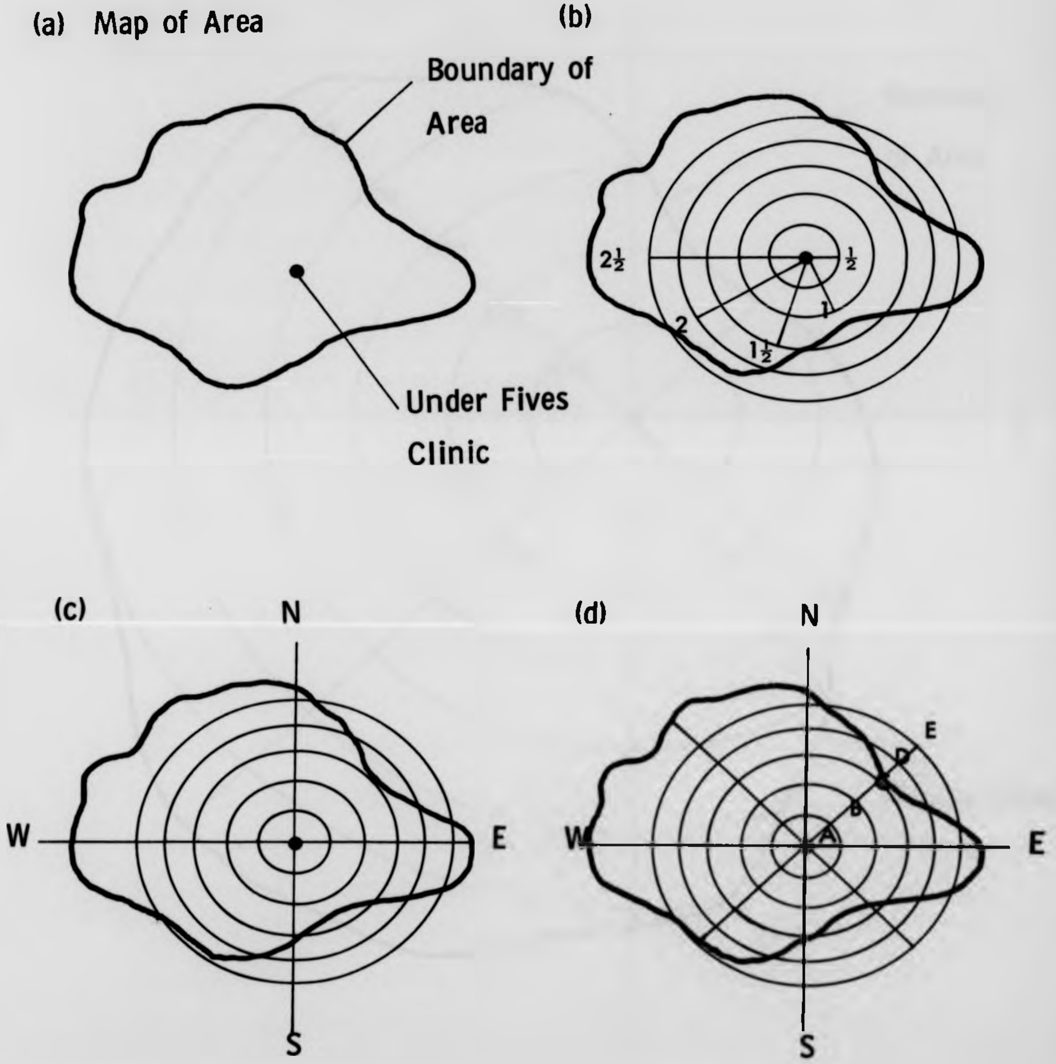
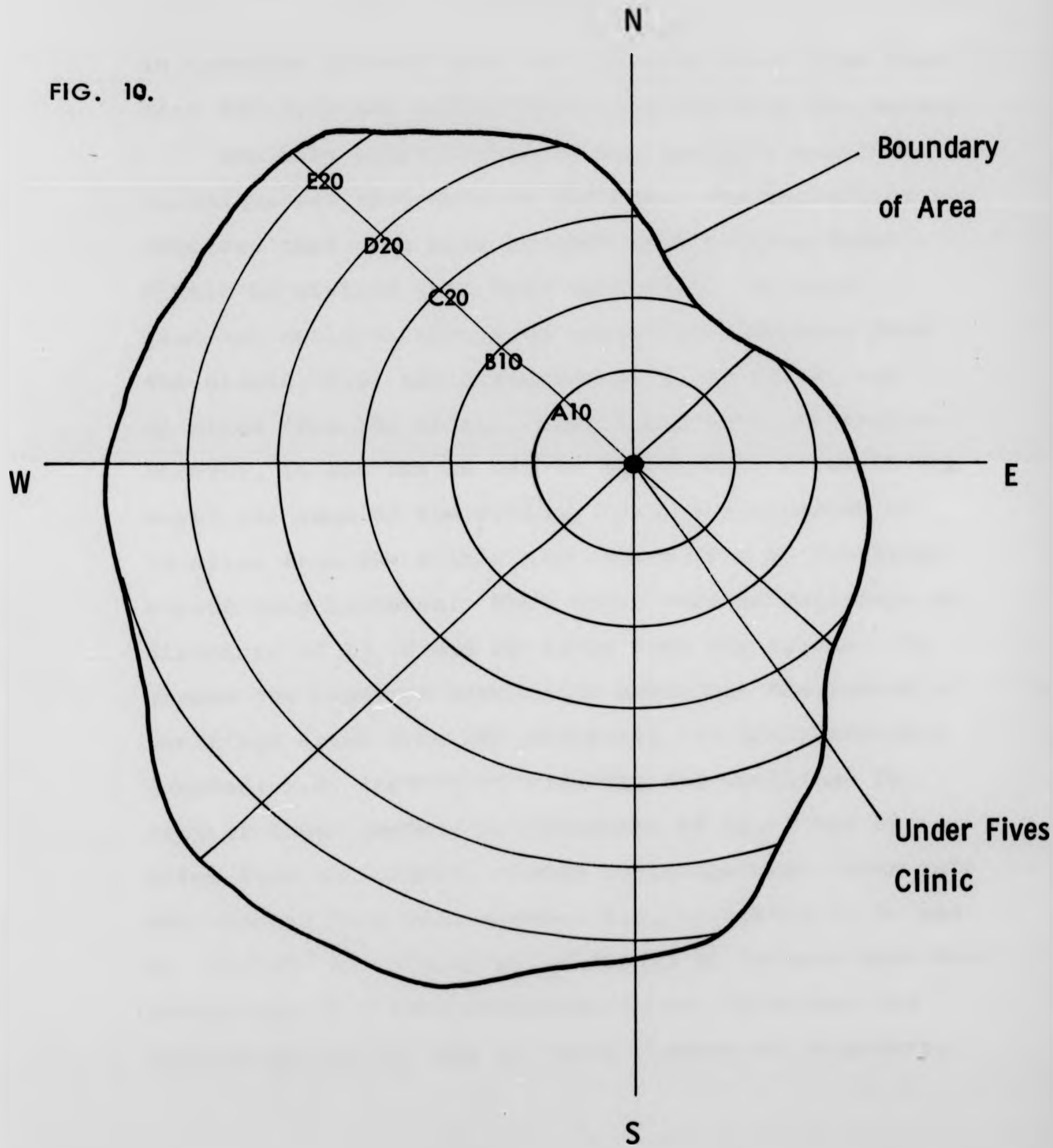


FIG. 10.



ESA-OKE

in question did not have any children under five then that dwelling was immediately excluded from the survey.

The only modification to the original sampling technique was that made in Esa Oke. The techniques required that each area drained by the Under Fives Clinic be divided into four quadrants. In each quadrant children living at specified distances from the clinic, i.e. the distances of $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, and $2\frac{1}{2}$ miles from the clinic, were taken into the sample. However, in Esa Oke in two of the quadrants (north and east) the edge of the village fell at a distance of $1\frac{1}{4}$ miles from the clinic, and there were no dwellings beyond this distance. Thus there were no dwellings at distances of $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic. To ensure the required numbers of dwellings the number of dwellings drawn from the remaining two quadrants were doubled, i.e. instead of visiting ten dwellings in each of these sectors at distances of $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ miles from the clinic, twenty dwellings were taken into the survey, from each sector, i.e. at points C. D. and E. FIGURE 10. There is no reason to believe that the proportion of clinic attenders to non attenders was altered in Esa Oke due to these changes in procedure..

(3) Sample Size.

The primary sampling unit was the dwelling. The object of the survey was to obtain a representative sample of children under five. ETHIOPIAN MEDICAL ASSOCIATION 3RD ANNUAL MEETING (1967) reported that "Major health conditions were assumed to have a prevalance of 20% or greater. To establish the differences (between baseline and resurvey study or between study and control communities) of 10% or more at 95% confidence levels required a minimum of two hundred observations". If this rationale is applied to this present study then two hundred children must be seen in each area. However, with multi occupied dwellings it was felt that the sample of two hundred children would be drawn from relatively few dwellings. i.e. if four children under five were found in each of the dwellings then visiting fifty dwellings would yield the required sample. However since the sampling was stratified by distance it was felt that a larger number of dwellings situated at varying distances need be taken into the sample. It was decided to visit two hundred dwellings in each of the four study areas each dwelling having at least one child under five. In the time available it was felt that this was a feasible number of dwellings to attempt to visit.

During the planning stage of study some comments made by WEBB (1969) proved useful. From her study it was found that on average three children under five could be expected per dwelling KIMMANCE (1970) working in Swaziland found an average of 2.8

children under five per home.

Working with an interpreter it was estimated that the 'interviewing' in each dwelling would take an average of thirty to forty minutes. As such it would be possible to visit eight to ten dwellings (each having at least one child under five) in an eight hour working day. This would leave sufficient extra time for any revisits that might be necessary.

(4) <u>Interpreter</u>. (Selection)

The field survey was carried out using questionnaires. They were interviewer administered, and not self administered. The latter were thought to be impractical in the areas chosen for the field survey in view of the low literacy rates.

Much thought was given to the choice of an interpreter. The author herself did not speak the local languages, and it would not have been feasible for her to study the different languages and dialects that she would have encountered in the four areas of the survey in the time available. Hence the questionnaires were administered via an interpreter. The interpreter should not only be profficient in the local language but also have a good knowledge of English to be able to understand and translate the questions and answers. Since the interviews were conducted in the homes and since it was considered more likely to meet mothers than fathers during the home visits it was decided that ideally the interpreter should be female. The interpreter must sense and understand the needs and the attitudes of the interviewed and should be capable of making the interviewed feel comfortable. She must question with kindness and listen quietly. She must speak with the interviewed as with friends and this she can do only when she regards the interviewer as a friend.

(5) Questionnaires.

The questionnaires were three in number (Appendix 2) The first contained information on the dwelling, and was completed for every dwelling having had at least one child under the age of five who slept in it the previous night. The questionnaire was designed to obtain information on the type of housing, water supply, the sewage and refuse disposal, number of occupants in the dwelling their age and sex breakdown. A question was included on the type of trade if any, carried out in the dwelling. Experience WOODLAND (1971) has shown that especially in West Africa, many women carried out small scale trading in their own dwelling. This could be their only source of income, or it could be to supplement the family earnings. It was felt that information on this might be correlated with social status, and also with the educative value to the child. Also if the trade was one which took up a great deal of the mother's time, then this might act as an obstacle to her taking her child regularly to the Under Fives Clinic. A word of explanation is necessary on the inclusion of question on type of animal if any kept in dwelling. In many African societies animals are not kept as pets but are usually considered as an investment and a source of income. For example cattle are used as 'bride price' and chicken reared for the purpose of sale of eggs. Thus information from this question could give an indication of family social status. Direct questions on family income and expenditure on housekeeping were intentionally avoided. It was felt that accuracy of answers to this type of question was doubtful and that such questions might arouse suspicion in the minds of the mothers as to the real purpose of the survey. The mothers might even feel that the information so gathered would be for income tax purposes etc. Experiences from other studies WYON AND GORDON (1971) has shown that mothers get suspicious when asked questions pertaining to earnings and expenditure. A measure of economic status was however no more than a peripheral interest in the study and it was not worth endangering the rapport with the villagers that direct questionning would have meant.

Early in the survey in Nigeria it was discovered that the mothers concept of time and distance was poor; the author was able to test this out by asking mothers at the end of the interview how long the mother thought the interview lasted. The average time spent was sixty to eighty minutes but the answers varied from five to ninety minutes; as a direct result of this observation the questions 21 and 22 in questionnaire 1 (appendix page 400) on time taken to fetch water were excluded.

Questionnaire number 2 was filled in for every family within the dwelling that had at least one child under the age of five years. This question sought to elicit information on parity of mother, number of living children, number of children born to mother (Appendix 2 page 401) Information was also obtained on the years of birth of the first and last child born to mother. A still birth or a neo-natal death could reduce the birth intervals.

Questionnaire number 2 also contained a set of questions on the mothers attitudes to the causation of disease, activities at the clinic and the reasons for attending or not attending the Under Fives Clinic. Further questions were included on the mothers ante natal history, i.e. if in the last pregnancy the mother visited the ante natal clinic, if so the number of visits and the reasons for attendance.

The third questionnaire was completed for each child under five who slept in the dwelling the previous night. If the child concerned was away from home at the time of visit then the dwelling was revisited once.

The questions in this questionnaire were of three types. First set. Here the answers were provided by the father, mother or guardian. These related to the age of child (if not available on the 'Road-to-health' card) past illnesses especially measles and whooping cough, number of stools passed in the last twenty four hours and episodes of diarrhoea in the past three months. Also an inquiry was made of the child's health on the day of interview, i.e. is the child well today?

Second set. The answers to this set of questions was extracted from the 'Road-to-Health' card and this was only possible for the children who attend the Under Fives Clinic and who had the card with them on the day of survey. Ideally all the children attending the Under Fives Clinic should have the 'Road-to-Health' card with them, but occasionally it was not available for perusal on the day of survey because it was lost or temporarily misplaced. Occasionally it was not available because it was, together with the family heirlooms, locked away in a cupboard or trunk and the key taken away by the father. This suggests the value attached to the card by some of the mothers, but to some extent defeats the purpose of the card which is meant to be available at all times, especially if the child suddenly fell ill and had to seek medical attention. Information obtained from the card was as follows:

Confirmation of date of birth, date card issued, information of immunisation given and their dates, weights of the child at previous clinic visits, total number of hospital admissions, and total number of visits to the Under Fives Clinic.

Third set. The answers to this set of questions were provided by observing and weighing the child. The information so obtained included, the weight of the child on the day of interview, presence or absence of skin lesions, and the presence or absence of umbilical hernia. It was decided to keep the measurements to a minimum for lack of time. Heights and weights are considered the most valid anthropometric measurements of young children which serve as an index of growth and development. Heights best reflects a child's past history, because it is stable and not affected by recent nutritional disturbances. Weight reflects both past and recent history of the child's health, although its interpretation may be ambiguous for each child unless the child has been followed longitudinally. However in the assessment of the health status of a group of children of different ages, weight would be a more realistic measurement to make. A single weight measurement could be used as a gross assessment of a population of children. Also the field conditions in developing countries allow weight to be measured far more accurately and easily than height, which is almost impossible to obtain with reasonable accuracy in young children.

The questionnaires were filled in order, i.e. 1, 2 and 3. The arrangement of questions in them were such that the answers to the early ones did not in any way embarass or upset the mother whose child might not have attended the clinic. 'Road-to-health' cards were only asked for at the end of the interview. Also procedures such as weighing the child were left to the last so that if the child was upset or was crying then this would not have interrupted the interview.

Each child had three questionnaires completed, i.e. the Dwelling, Family and Child questionnaires. The answers to the family questionnaires would be identical to that of all his siblings and the answers to the dwelling questionnaires would be identical to that of any other children under five living in the same dwelling.

(6) Weighing of children.

Growth is one of the most sensitive indicators of nutritional status of a child. Physical changes characteristic of malnutrition do not appear until the child has fairly advanced malnutrition. Since weight deficiencies appear before there are any other changes JELLIFFE (1963,) a method of evaluation which incorporates measurement of weights will allow early recognition of malnutrition and also will indirectly help assess the beneficial effects if any of the clinic activities. SCRIMSHAW et al (1968) have shown the interaction of infection and malnutrition. Since the work of the Under Fives Clinic involves prevention of the commonly occurring infectious diseases by immunisation and health education it is hoped that with time the work of the clinic would be reflected in the weight gain among the clinic attenders.

Weighing of children.

In a report of the CONFERENCE ON THE USE OF GROWTH CHARTS (1971) on the use of growth charts for assessing progress of children and teaching of parents JELLIFFE AND JELLIFFE (1971) stated that workers in fifty two countries agreed on the following criteria for a good weighing device for use in developing countries.

1. Low cost.

Price no more than $35.00 U.S. scale. The scales used in the present study cost £5.00

2. Sufficient accuracy.

A level of accuracy of 100 gms was generally acceptable. The scales used in the study were graduated in lbs and kgms and were graduated up to 25 kgms and were considered accurate to within ¼ lb or 100 gms.

3. Sturdiness. Stress was given to the need for simplicity and ease of repair. Durability; use of non-rusting material and ease of cleaning were also considered important.

FIG 11

SIMPLE HANGING SCALE- A SIMILAR SCALE WAS USED IN THE FIELD SURVEY OF THE PRESENT STUDY

The Salter hanging scale used in present study complied with these requirements.

4. Weight range.

For weighing childrenup to the age of five a range of up to 25 kg was suggested. The scale used in the present survey had a range of 25 kg.

5. Calibration.

The need for continued checking and calibration of apparatus was widely emphasised. In the present study the weighing scales used in the field were checked twice weekly against the scales used at the clinic. It must be emphasised that recalibration of the scales was not required during the entire period of the study.

The scales used in the present study was the Salter spring balance. The scales had a circular dial calibrated in lbs and kgms. The hook of the scales was suspended from a strong beam or at times from a branch of a tree. The child was placed in a specially made washable cloth trousers. The trousers were then suspended from the bottom of the scale. The reading was taken at eye level, once the initial movement of the scale had ceased. It was important to ensure that the child stayed still while the reading was being taken. A few children were apprehensive but with a little persuasion it was possible to get all except 23 children weighed by this method. (FIGURE 11). The trousers were made of cloth and posed rather a problem in that they had to be washed and dried very frequently. In spite of having available a spare pair of trousers it was felt that plastic or other easily cleanable material would have been more practical for the purpose.

C. CLINIC STUDY.

(1) Objectives.

One of the objectives of the field study was to obtain information on the uptake of services of the Under Fives Clinic. In order to aid interpretation of the findings from the field survey information on the activities of the clinics in the areas studied would be necessary.

Information from the four clinics was obtained using the following sources:

(1) Clinic attendance records.

(2) Observations made during clinic sessions.

(3) Personal communications with clinic staff.

(2) Clinic Records.

The 'Road-to-Health' card, kept at home by the mother and brought to the clinic at each visit, is the most informative record as far as each individual child was concerned. However these records cannot be used to give an indication of the daily work load of the clinic, for example on the total number of children seen per session, the number and type of immunisation given, and the staff employed. This information is useful for administrative purposes, and therefore it is necessary to at least keep minimal records at the clinics of these items of information. Some clinics use registers for recording the name, address and other personal details of the clinic attenders. In addition other information is collected on each individual child at each attendance, for example, treatment and immunisation given at each visit. However, with the introduction of the home-based records, record keeping at clinics has been reduced to a minimum.

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Many Under Fives Clinics have adopted the tally chart system of record keeping to obtain information on daily attendances and immunisations. FIGURE 12 page 97.

In the present study it was decided to collect whatever relevant information was available at the clinic by perusal of available records, e.g. record books, registers, tally charts. It was decided to look at the records available for the year preceding the year of study. The search was limited to the data for one year only. It was thought that in the time available for the clinic study this would be feasible. The author had no prior knowledge of what information would be available at the clinics. As such the decision on what information should be collected was left till each clinic was visited.

(3) Observations made during clinic sessions.

It was decided that the author should spend up to four sessions at each Under Fives Clinic. These sessionsshould preferably be arranged to cover different session times and different days. For example, if clinics were held both in the morning and afternoon then visits should be attempted at each time. Also if there was a marked variation in the numbers attending a clinic on a particular day of the week, for example on the local market day, it was felt that one visit should be made to the clinic on these days.

All observations that were made were informal. It was decided that the author should be a passive observer at the clinic rather than take any active part in the activities of the clinic. This was mainly in order to maintain the goodwill and co-operation of the clinic staff. No measurements or time and motion studies were carried out for the same reason.

(4) Personal communication with clinic staff.

Information on staffing, hours of work, session times, and qualifications of the staff was obtained by questionning the clinic staff.

DATA ANALYSIS

The information collected from the field survey was transfered onto code sheets. From these sheets the information was punched onto Hollerith cards, and then computer analysed.

FIG: 12

UNDER FIVE CLINIC ATTENDANCES

Date . July 9 - 16th '73 . . . . . Name of the Clinic . Nanson . . . .

		Total
New attendances	øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøø00 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	33
Repeat attendances	øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø øøøøø 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	70
Underweight new attendances	øøøøø øøøøø øøøøø 00000 00000 00000	15
Underweight repeat attendances	øøøøø øøøøø øøøøø øøøøø ø0000 00000	21
Smallpox vaccination	øøøøø øøøøø øøøøø øøø00 00000 00000 00000 00000	18
D.P.T.	1: øøøøø øøøøø øøøøø øø000 00000 00000 2: øøøøø øøøøø øøøøø øøø00 00000 00000 3: øøøøø 00000 00000 00000	1- 17 2- 18 3- 5

CHAPTER IV

RESULTS OF FIELD SURVEY

SURVEY POPULATION

TABLES 13 - 17.

TABLE 13

THE NUMBER OF DWELLINGS VISITED, BY AREA AND BY PARTICIPATION IN SURVEY.

DWELLINGS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Total number of dwellings visited	249	249	240	282	1020
Number of dwellings willing to participate in survey	248*	249	240	282	1019
% dwellings willing to participate	99.6%	100%	100%	100%	99.9%

*In Ilesha occupants of one dwelling only refused to take part in the survey. (Table 13)
The occupants of this dwelling were Jehovah's Witnesses and refused to participate in survey on religious grounds. Their faith did not permit them to accept any type of medical service. This dwelling was excluded from the survey. The response rate was a 100% for all areas except Ilesha where it was 99.6%.

TABLE 13

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TABLE 14

DISTRIBUTION OF DWELLINGS VISITED BY NUMBER AND PERCENTAGE DWELLINGS WITH CHILDREN UNDER THE AGE OF FIVE BY AREA.

DWELLINGS	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Number of dwellings willing to participate in survey	248	249	240	282	1019
Dwellings with children under 5 - and therefore included in survey	183	197	200	200	780
Percentage of dwellings with children under 5	73.5%	79.1%	83.3%	70.9%	77%

Table 14 shows the percentage of dwellings which had children under five living in them. It is seen that even though 1019 dwellings were visited only 780 or 77% had at least one child under the age of five living in the dwelling.
In Ilesha 73.5% in Esa-Oke 79.1% in Namitambo 83.3% and in Mansa 70.9% dwellings had children under the age of five.

TABLE 15

DISTRIBUTION OF DWELLINGS WITH CHILDREN UNDER THE AGE OF FIVE BY TOTAL NUMBER OF FAMILIES AND CHILDREN SEEN BY MEAN NUMBER OF CHILDREN PER DWELLING BY AREA

	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Number of dwellings with children under 5	183	197	200	200	780
Total number of families with children under 5	323	299	202	213	1037
Total number of children under 5	434	405	261	314	1414
Mean number of children under 5 per dwelling	2.37	2.05	1.30	1.57	1.81

Table 15 shows the mean number of children under five per dwelling. In Ilesha 2.37 children per dwelling were seen. In Esa-Oke 2.05 children per dwelling were found while in Namitambo 1.30 children per dwelling were seen and in Mansa 1.57 children per dwelling were seen. The over all figure for all areas was 1.81 children per dwelling

TABLE 16

NUMBER OF DWELLINGS WITH CHILDREN UNDER FIVE BY DISTANCE OF DWELLING FROM UNDER FIVES CLINIC AND BY AREA.

DISTANCE OF DWELLINGS FROM THE UNDER FIVES CLINIC	AREA				
	DWELLINGS ILESHA (NIGERIA)	DWELLINGS ESA OKE (NIGERIA)	DWELLINGS NAMITAMBO (MALAWI)	DWELLINGS MANSA (ZAMBIA)	ALL AREAS
½ mile	20.2% (37)	18.8% (37)	20.0% (40)	20.0% (40)	19.7% (154)
1 mile	19.7% (36)	19.8% (39)	20.0% (40)	20.0% (40)	19.9% (155)
1½ miles	21.9% (40)	20.3% (40)	20.0% (40)	20.0% (40)	20.5% (160)
2 miles	19.1% (35)	20.8% (41)	20.0% (40)	20.0% (40)	20.0% (156)
2½ miles	19.1% (35)	20.3% (40)	20.0% (40)	20.0% (40)	19.9% (155)
All distances	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 16.

It was aimed to visit forty dwellings with children under the age of five for each distance from the clinic, i.e. ½ mile, 1 mile, 1½, 2 and 2½ miles from the clinic per area. This was achieved in Namitambo and Mansa. In Ilesha and Esa Oke the total number of children per dwelling was greater than in the other two areas. This was as a direct result of the dwellings in these two areas being multi-occupied dwellings (vide Table 15 mean number of children per dwelling). Due to the above more questionnaires had to be completed in Ilesha and Esa Oke; this resulted in fewer dwellings being visited in these areas due to lack of time. In Esa Oke the sampling technique was slightly modified in order to obtain the required number of dwellings (vide page 83.)

TABLE 17.

DISTRIBUTION OF CHILDREN UNDER FIVE BY THE DISTANCE OF THEIR DWELLINGS FROM CLINIC BY AREA

DISTANCE OF THE CHILDREN'S DWELLING FROM UNDER FIVES CLINIC	AREA				
	CHILDREN ILESHA (NIGERIA)	CHILDREN ESE OKE (NIGERIA)	CHILDREN NAMITAMBO (MALAWI)	CHILDREN MANSA (ZAMBIA)	CHILDREN ALL AREAS
½ mile	22.1% (96)	22.5% (91)	18.0% (47)	20.1% (63)	21.0% (297)
1 mile	22.6% (98)	17.3% (70)	20.3% (53)	16.9% (53)	19.4% (274)
1½ miles	21.9% (95)	20.7% (84)	21.5% (56)	18.4% (58)	20.8% (293)
2 miles	18.4% (80)	19.5% (79)	18.7% (49)	24.8% (78)	20.2% (285)
2½ miles	15.0% (65)	20.0% (81)	21.5% (56)	19.8% (62)	18.6% (264)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 17 shows the distribution of children under the age of five by distance of dwelling from clinic.

In Ilesha at each distance, i.e. ½ mile, 1 mile, 1½ miles and 2 miles from clinic, between 18.4 and 22.6% of children are seen to live. However only 15% of children live at a distance of 2½ miles from clinic. This could have arisen due to fewer dwellings being sampled at this distance in Ilesha (Table 17). In Esa Oke and Namitambo the children are evenly distributed at each distance from the clinic, i.e. between 17.3% and 22.5% in Esa Oke and 18.0% and 21.5% in Namitambo. In Mansa, at distances of ½, 1½ and 2½ miles from clinic, the pattern is similar to Esa Oke and Namitambo. However, at a distance of 1 mile there were only 16.9% of children and at 2 miles 24.8%. There does not seem to be any likely explanation for this.

ADEQUACY OF SAMPLING.

Tables 13 - 17 show the results of sampling. There was no prior knowledge of the numbers of dwellings in each area that would not have any children under the age of five. As such in order to maintain uniformity for all areas it was decided to take into the sample only dwellings which had at least one child under the age of five. From the study it was shown that overall for all areas 23% of the dwellings had no children under the age of five (Table 14).

In the study it was decided to see if distance of the dwelling from the clinic was an important factor in the uptake of clinic services It was decided to sample dwellings with children under five situated at specified distances from the clinic. The distances were ½, 1, 1½, 2 and 2½ miles from the clinic. A total of 200 dwellings from each area of which 20% or 40 dwellings from each specified distance were to be taken into the survey. Table 16 shows that for each area and at each distance the percentage of dwellings seen approximated to 20%. The range was 18.8% - 20.8%

If the distribution of children in the dwellings in each area was fairly constant then it could be assumed that approximately equal numbers of children would be seen living at each distance from the clinic. There was no reason to believe that this would not be so. Table 17 confirms that there were approximately equal numbers of children living in the dwellings at different distances from the clinic.

The range for all areas taken together was 18.7% - 21.0%.

CHARACTERISTICS OF ALL DWELLINGS

TABLES 18 - 37.

TABLE 18.

DISTRIBUTION OF DWELLINGS BY NUMBER OF CHILDREN UNDER FIVE PER DWELLING BY AREA.

NUMBER OF CHILDREN UNDER FIVE PER DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	26.3% (65)	21.0% (52)	17.0% (40)	28.8% (82)	23.0% (239)
1	26.2% (64)	33.0% (83)	60.0% (145)	27.8% (108)	39.2% (400)
2	22.0% (55)	25.0% (63)	20.0% (49)	27.0% (75)	24.0% (242)
3	13.2% (33)	11.0% (27)	3.0% (6)	5.0% (13)	8.0% (79)
4	6.0% (15)	6.0% (14)	0.0% (0)	1.0% (3)	3.0% (32)
5	2.0% (6)	2.0% (5)	0.0% (0)	0.4% (1)	1.2% (12)
6	2.0% (4)	0.8% (2)	0.0% (0)	0.0% (0)	0.7% (6)
7	1.1% (3)	0.8% (2)	0.0% (0)	0.0% (0)	0.5% (5)
8	0.4% (1)	0.4% (1)	0.0% (0)	0.0% (0)	0.2% (2)
9	0.8% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)
TOTAL	100.0% (248)	100.0% (249)	100.0% (240)	100.0% (282)	100.0% (1019)

In Table 18 it is seen that the number of children per dwelling differed considerably between the West African and the Central African areas. In Ilesha thirty one dwellings had four or more children under the age of five, and in Esa Oke twenty four dwellings had four or more children, while in Namitambo there were no dwellings that had more than three children under the

TABLE 18 (Continued)

age of five, while in Mansa three dwellings had four children under the age of five, and one dwelling had five children under the age of five.

In Ilesha there were two dwellings that had nine children under the age of five, and Esa Oke had one dwelling that had eight children under the age of five.

TABLE 19

DISTRIBUTION OF THE DWELLINGS BY THE NUMBER OF FAMILIES WITH CHILDREN UNDER FIVE PER DWELLING BY AREA.

FAMILIES PER DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	56.4% (103)	68.0% (134)	99.0% (198)	94.0% (188)	79.8% (623)
2	24.0% (44)	19.0% (37)	1.0% (2)	5.5% (11)	12.1% (94)
3	12.0% (22)	9.0% (18)	0.0% (0)	0.5% (1)	5.3% (41)
4	5.5% (10)	3.0% (6)	0.0% (0)	0.0% (0)	2.1% (16)
5	1.1% (2)	1.0% (2)	0.0% (0)	0.0% (0)	0.5% (4)
6	0.5% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
7	0.5% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 19 shows that far more dwellings in Ilesha and Esa Oke were multi-occupied, i.e. had more than one family living in a dwelling. In Ilesha 36 out of 183 dwellings, i.e. 19.6% had three or more families per dwelling. In Namitambo however 99.0% of the dwellings had only one family per dwelling while in Mansa 94.0% of dwellings were occupied by one family only.

TABLE 20.

DISTRIBUTION OF DWELLINGS BY NUMBER OF ADULT MALES IN DWELLING BY AREA

ADULT MALES IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None	12.0% (22)	8.0% (16)	45.5% (91)	8.5% (17)	19.0% (146)
1	25.0% (46)	40.0% (79)	53.5% (107)	83.5% (167)	51.0% (399)
2	24.0% (44)	25.0% (49)	1.0% (2)	5.0% (10)	13.0% (105)
3	15.0% (28)	14.0% (28)	0.0% (0)	2.0% (4)	8.0% (60)
4	12.0% (22)	5.0% (10)	0.0% (0)	1.0% (2)	4.0% (37)
5	8.0% (14)	5.0% (10)	0.0% (0)	0.0% (0)	3.0% (24)
6	2.0% (4)	2.0% (4)	0.0% (0)	0.0% (0)	1.0% (8)
7 and over	2.0% (3)	1.0% (1)	0.0% (0)	0.0% (0)	1.0% (4)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 20 shows the distribution of adult males per dwelling. In Ilesha, Esa Oke and Mansa between 8% and 12% dwellings did not have an adult male living in them. However, in Namitambo it is interesting to note that 45.5% dwellings, i.e. almost half the dwellings visited did not have an adult male in them.

TABLE 21

DISTRIBUTION OF DWELLINGS BY TOTAL NUMBER OF MALES IN DWELLING BY AREA.

TOTAL NUMBER OF MALES IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None	2.0% (3)	1.0% (2)	13.0% (26)	3.0% (6)	5.0% (37)
1	3.0% (6)	3.5% (7)	32.0% (64)	23.0% (46)	16.3% (123)
2	11.0% (20)	10.0% (19)	35.5% (71)	28.5% (57)	21.2% (167)
3	14.0% (26)	12.0% (23)	13.5% (27)	22.5% (45)	15.5% (121)
4	14.0% (26)	17.5% (36)	4.0% (8)	14.0% (28)	12.5% (98)
5	11.0% (21)	8.0% (16)	1.0% (2)	6.5% (13)	7.0% (52)
6	10.0% (18)	14.0% (27)	1.0% (2)	1.5% (3)	6.0% (50)
7	10.0% (18)	9.0% (17)	0.0% (0)	0.0% (0)	4.5% (35)
8	6.0% (11)	10.0% (20)	0.0% (0)	0.5% (1)	4.0% (32)
9	5.0% (9)	3.5% (7)	0.0% (0)	0.5% (1)	2.0% (17)
10 and over	14.0% (25)	11.5% (23)	0.0% (0)	0.0% (0)	6.0% (48)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 21 shows the total number of males in the dwellings. This table is an extension of Table 20. Here the male children have been added on to the number of adult males in

TABLE 21 (Continued)

the dwelling. Again it is seen that in Namitambo none of the dwellings have over six males per dwelling, while in Ilesha there are twenty five dwellings that had ten or more males in the dwelling.

The modal value for total males per dwelling in Ilesha was four, in Esa Oke four, in Namitambo two and in Mansa two. The overall figure for all areas was two.

TABLE 22

DISTRIBUTION OF DWELLINGS BY NUMBER OF ADULT FEMALES IN DWELLING BY AREA.

ADULT FEMALES IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None	0.0% (0)	0.0% (0)	0.0% (0)	1.0% (2)	0.3% (2)
1	11.0% (20)	10.0% (19)	85.5% (171)	79.0% (158)	46.6% (368)
2	19.0% (34)	28.0% (56)	13.0% (26)	14.0% (28)	18.3% (144)
3	17.0% (32)	22.0% (44)	1.5% (3)	5.0% (10)	11.0% (89)
4	22.0% (41)	16.0% (32)	0.0% (0)	1.0% (2)	10.0% (75)
5	12.0% (22)	11.0% (21)	0.0% (0)	0.0% (0)	6.0% (43)
6	9.0% (16)	7.0% (14)	0.0% (0)	0.0% (0)	4.0% (30)
7	4.0% (7)	3.5% (7)	0.0% (0)	0.0% (0)	2.0% (14)
8	3.0% (6)	2.0% (3)	0.0% (0)	0.0% (0)	1.0% (9)
9	1.0% (2)	0.5% (1)	0.0% (0)	0.0% (0)	0.4% (3)
10 and over	2.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (3)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 22 shows the total number of adult females per dwelling. If this table is compared with Table 20 which shows the total number of adult males it is seen that in all four areas there is

TABLE 22 (Continued)

preponderance of females. It is seen that in Ilesha, Esa-Oke and in Namitambo all dwellings had at least one adult female in the dwelling while 12% dwellings in Ilesha 8% in Esa-Oke 45.5% in Namitambo and 8.5% in Mansa had no adult males in the dwelling (Table 20) 56 or 31% dwellings in Ilesha and 46 or 24% of dwellings in Esa Oke had five or more adult females in the dwellings and in Mansa only 1% of the dwellings, i.e. two dwellings had four adult females in the dwelling.

TABLE 23

DISTRIBUTION OF DWELLINGS BY TOTAL NUMBER OF FEMALES IN DWELLING BY AREA.

TOTAL NUMBER FEMALES IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
None					
1	0.5% (1)	1.0% (2)	27.0% (54)	11.5% (23)	10.0% (80)
2	7.0% (13)	6.0% (12)	39.0% (78)	28.5% (57)	21.0% (160)
3	11.0% (20)	13.0% (26)	24.0% (48)	24.0% (48)	18.0% (142)
4	8.0% (14)	10.0% (20)	6.5% (13)	23.5% (47)	12.0% (94)
5	13.0% (23)	12.0% (23)	2.5% (5)	9.5% (19)	9.0% (70)
6	11.0% (20)	10.0% (19)	0.5% (1)	2.5% (5)	6.0% (45)
7	11.0% (21)	11.0% (21)	0.5% (1)	0.5% (1)	6.0% (44)
8	10.0% (18)	9.0% (17)	0.0% (0)	0.0% (0)	4.0% (35)
9	9.0% (17)	8.0% (16)	0.0% (0)	0.0% (0)	4.0% (33)
10	7.0% (12)	8.0% (15)	0.0% (0)	0.0% (0)	3.0% (27)
11	3.0% (6)	4.0% (8)	0.0% (0)	0.0% (0)	2.0% (14)
12 and over	9.5% (18)	9.0% (18)	0.0% (0)	0.0% (0)	5.0% (36)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 23 is an extension of Table 22. It shows the total number of females in the dwellings. This included female adults and

TABLE 23 (Continued)

children. 71 or 28.5% dwellings in Ilesha have more than seven females in the dwellings and in Esa-Oke 74 dwellings have over seven females in the dwellings.

In Namitambo and Mansa no dwellings have over seven females in them.

TABLE 24

DISTRIBUTION OF DWELLINGS BY TOTAL NUMBER OF OCCUPANTS BY AREA.

TOTAL NUMBER OF PERSONS IN DWELLINGS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0 - 1					
2 - 3	2.0% (3)	1.0% (2)	47.0% (94)	15.0% (30)	16.0% (129)
4 - 5	5.0% (10)	8.5% (17)	39.5% (79)	38.5% (77)	23.0% (183)
6 - 7	15.0% (28)	15.0% (29)	11.5% (23)	29.5% (59)	18.0% (139)
8 - 9	12.0% (22)	12.0% (24)	2.0% (4)	14.5% (29)	10.0% (79)
10 - 11	13.0% (24)	12.5% (25)	0.0% (0)	1.5% (3)	7.0% (52)
12 - 13	13.0% (24)	14.0% (27)	0.0% (0)	0.5% (1)	7.0% (52)
14 - 15	12.0% (22)	9.5% (19)	0.0% (0)	0.5% (1)	5.0% (42)
16 - 17	11.0% (20)	11.5% (23)	0.0% (0)	0.0% (0)	5.8% (43)
18 - 19	5.0% (10)	5.5% (10)	0.0% (0)	0.0% (0)	3.0% (20)
20 - 21	5.0% (9)	1.0% (2)	0.0% (0)	0.0% (0)	1.4% (11)
22 and over	7.0% (11)	9.5% (19)	0.0% (0)	0.0% (0)	3.8% (30)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 24 is a combination of Tables 21 and 23. It gives the distribution of the total number of persons living in the dwelling, i.e. children and adults of both sexes. It is interesting t

TABLE 24 (Continued)

note that in the two West African study areas, i.e. Ilesha and Esa-Oke, the modal number of persons per dwelling is between six and seven, while in Namitambo it is two and three and in Mansa four and five. The modal value for all areas when taken together lies between four and five. It is also worth noting that in Ilesha there are at least eleven dwellings (7.0%) having twenty two or more persons per dwelling while in Esa-Oke too, at least nineteen dwellings (9.5%) of the dwellings have twenty two or more persons in each.

TABLE 25.

DISTRIBUTION OF DWELLINGS BY NUMBER OF OCCUPANTS PER ROOM BY AREA

NUMBER OF OCCUPANTS PER ROOM	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	4.9% (9)	1.5% (3)	3.5% (7)	7.0% (14)	4.2% (33)
2	27.9% (51)	25.4% (50)	31.5% (63)	38.5% (77)	30.9% (241)
3	34.4% (63)	36.0% (71)	37.0% (74)	28.5% (57)	34.0% (265)
4	21.9% (40)	23.4% (46)	17.5% (35)	14.5% (29)	19.2% (150)
5	6.6% (12)	10.7% (21)	5.0% (10)	6.0% (12)	7.0% (55)
6	3.8% (7)	2.0% (4)	3.0% (6)	2.5% (5)	2.8% (22)
7	0.0% (0)	1.0% (2)	1.5% (3)	0.5% (1)	0.8% (6)
8	0.0% (0)	0.0% (0)	1.0% (2)	2.0% (4)	0.8% (6)
9	0.5% (1)	0.0% (0)	0.0% (0)	0.5% (1)	0.3% (2)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 25 shows the number of occupants per room. In Ilesha, Esa Oke and Namitambo the median values is three occupants per room. However, it must be noted that twenty dwellings in Ilesha, twenty seven in Esa Oke, twenty one in Namitambo and twenty two dwellings in Mansa have five or more occupants per room.

TABLE 26

DISTRIBUTION OF DWELLINGS BY OWNERSHIP AND BY AREA.

OWNERSHIP OF DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Own	72.0% (132)	88.9% (175)	88.0% (176)	78.5% (157)	82.1% (640)
Rented	27.9% (51)	11.1% (22)	3.5% (7)	16.0% (32)	14.4% (112)
Other	0.0% (0)	0.0% (0)	8.5% (17)	5.5% (11)	3.5% (28)
All	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 26 shows that for all areas 82.1% of the dwellings were owned by the occupants. However, considering each individual area it is seen that in Ilesha only 72% of the dwellings were owned by the occupants while in Namitambo and Esa Oke 88% and 88.9% of the dwellings respectively were owned by the occupants. 8.5% dwellings in Namitambo and 5.5% dwellings in Mansa were neither owned or rented, i.e. the occupants of these dwellings did not own these dwellings but did not also pay any rent for them. This group consisted of for example those living in a relatives' house, where no rent was paid, or those who worked or helped in the farm or other business but did not pay rent for the lodgings.

TABLE 27

DISTRIBUTION OF DWELLINGS BY PRESENCE OF TRADE IN DWELLING AND BY AREA.

TRADE IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	22.4% (41)	10.1% (20)	0.5% (1)	0.5% (1)	8.1% (63)
No	72.6% (142)	89.9% (177)	99.5% (199)	99.5% (199)	91.9% (717)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

22.4% of dwellings in Ilesha had a trade carried out in it. (Table 27) Esa Oke had 10.1% of dwellings with a trade in them. Trade carried out in a dwelling is a rare occurence in the Central African countries as shown by the Namitambo and Mansa figures. These trades are usually carried out by women as a source of supplementary income.

TABLE 27

DISTRIBUTION OF DWELLINGS BY PRESENCE OF TRADE IN DWELLING AND BY AREA.

TRADE IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	22.4% (41)	10.1% (20)	0.5% (1)	0.5% (1)	8.1% (63)
No	72.6% (142)	89.9% (177)	99.5% (199)	99.5% (199)	91.9% (717)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

22.4% of dwellings in Ilesha had a trade carried out in it. (Table 27) Esa Oke had 10.1% of dwellings with a trade in them. Trade carried out in a dwelling is a rare occurence in the Central African countries as shown by the Namitambo and Mansa figures. These trades are usually carried out by women as a source of supplementary income.

TABLE 28

DISTRIBUTION OF DWELLING BY TYPE TRADE IN DWELLING BY AREA.

TYPE OF TRADE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Petty sales	14.0% (25)	6.0% (13)	0.5% (1)	0.5% (1)	5.0% (40)
Tailor	4.0% (8)	3.0% (5)	0.0% (0)	0.0% (0)	2.0% (13)
Food sales	2.0% (2)	1.0% (1)	0.0% (0)	0.0% (0)	0.5% (4)
Other	3.0% (6)	1.0% (1)	0.0% (0)	0.0% (0)	1.0%
No	77.0% (142)	90.0% (177)	99.5% (199)	99.5% (199)	91.5% (717)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 28 shows a breakdown of the type of trade carried out in the dwellings. In both Ilesha and Esa Oke the most frequent trade was in the form of a very small shop selling groceries and toiletries 4% of the dwellings in Ilesha and 3% of the dwellings in Esa Oke carried on small scale tailoring businesses. Except in one dwelling in Ilesha where the entire family income came from the tailoring trade carried out by the father, the tailoring was carried out by the mother or other female as a subsidiary form of income.

The category of 'other' included a mechanic, a football pools agent, a weaver (textile) and a local herbalist.

TABLE 29

DISTRIBUTION OF DWELLINGS BY TYPE OF WALLS BY AREA.

TYPE OF WALLS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Brick	47.5% (87)	32.0% (63)	2.0% (4)	11.0% (22)	22.6% (176)
Stone	18.6% (34)	25.4% (50)	2.5% (5)	1.5% (3)	11.8% (92)
Laterite	33.9% (62)	42.6% (84)	95.5% (191)	87.5% (175)	65.6% (152)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 29.

In Mansa and Namitambo a large proportion of the dwellings had laterite walls. In Ilesha and Esa Oke too, dwellings with laterite walls were common (33.9% and 42.6% respectively) but 47.5% and 32.0% dwellings respectively had brick walls. Thus homes in West Africa tended to be constructed of more long lasting material, i.e. these buildings were more permanently constructed. Those in Namitambo especially tended to be much more temporary in nature.

TABLE 30

DISTRIBUTION OF DWELLINGS BY TYPE OF FLOOR BY AREA.

TYPE OF FLOOR	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Cement	65.6% (120)	64.0% (126)	4.5% (9)	11.5% (23)	35.6% (278)
Mud	33.9% (62)	36.0% (71)	94.5% (189)	87.5% (175)	63.7% (492)
Wood	0.50% (1)	0.0% (0)	1.0% (2)	1.0% (2)	0.7% (5)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

The more temporary nature of the dwellings in Namitambo and Mansa is echoed in the flooring seen in these areas. Table 30 shows that in 94.5%, 87.5% of dwellings respectively in Namitambo and Mansa mud is used as a covering for the floors, whereas in Ilesha and Esa Oke the majority of the floors are cemented.

TABLE 31

DISTRIBUTION OF DWELLINGS BY ITS VENTILATION BY AREA.

VENTILATION	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
A	35.5% (65)	11.2% (22)	6.0% (12)	5.0% (10)	14.0% (109)
B	34.4% (63)	44.1% (87)	18.0% (36)	15.0% (30)	27.7% (216)
C	30.1% (55)	44.7% (88)	76.0% (152)	80.0% (160)	58.3% (455)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

A. All rooms had at least one window that opened to the exterior, and at time of survey these windows were open

B. Half or more rooms had windows that opened to the exterior and these windows were open at the time of survey.

C. Less than half of the rooms had windows that opened to the exterior and/or the windows that opened to the exterior were shuttered up.

The overall standard of ventilation was poor. Most buildings especially in Ilesha and Esa Oke had adequate numbers of windows but in many cases these windows were shuttered up permanently or kept shut most of the time. When questioned by the author about the reason for this some of the following answers were obtained.

(1) "the house becomes too dusty"
(2) "to keep away insects and mosquitoes etc"
(3) "to prevent thefts"
(4) "hinges broken so unable to open"

TABLE 32

DISTRIBUTION OF DWELLINGS BY PLACE WHERE COOKING IS DONE BY AREA.

COOKING DONE IN	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Kitchen	91.3% (167)	89.3% (176)	40.0% (80)	37.0% (74)	63.7% (497)
Part of living room	3.8% (7)	6.1% (12)	41.5% (83)	1.5% (3)	13.5% (105)
Outside	4.9% (9)	4.6% (9)	18.5% (27)	61.5% (123)	22.8% (178)
All	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

91.3% and 89.3% dwellings in Ilesha and Esa Oke respectively have their own kitchens while in Mansa 61.5% of the dwellings have no kitchen and cooking is done outside the dwellings. In the wet weather this can give rise to substantial problems. It would be impossible in these circumstances to cook three times a day. Most mothers are, however, able to do all their daily cooking once a day. Living in a tropical climate and having no proper refrigeration facilities this could pose problems with regard to the spoilage of food.

In all areas cooking was done at floor level. This could increase the risks of injury from burns especially in the case of toddlers and young children.

TABLE 33

DISTRIBUTION OF DWELLING BY SOURCE OF WATER SUPPLY BY AREA.

SOURCE OF WATER SUPPLY	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Pipe at home	1.1% (2)	0.0% (0)	0.0% (0)	5.5% (11)	1.7% (13)
Own well	0.5% (1)	0.0% (0)	0.5% (1)	0.0% (0)	0.3% (2)
Shared well	0.0% (0)	0.0% (0)	99.5% (199)	76.0% (152)	45.0% (351)
Street pipe	98.4% (180)	0.0% (0)	0.0% (0)	7.5% (15)	24.9% (195)
River or stream	0.0% (0)	100.0% (197)	0.0% (0)	11.0% (22)	28.1% (219)
	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 33. Ilesha being a town has its own pipe borne water supply system and 98.4% of the dwellings get their water supply from street pipes. In Esa Oke there is no public pipe borne water system, and as such, water for drinking and washing is got from two streams that flow in the outskirts of the village.

In Mansa and Namitambo the main source of water supply is from wells. These wells are usually shared by many families.

TABLE 34

DISTRIBUTION OF DWELLING BY AVAILABILITY OF LATRINE BY AREA.

LATRINE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Own	30.1% (55)	31.0% (61)	34.0% (68)	55.5% (111)	37.8% (295)
Shared	46.4% (85)	17.3% (34)	31.5% (63)	6.5% (13)	25.0% (195)
Public	0.0% (0)	0.0% (0)	0.5% (1)	0.0% (0)	0.1% (1)
None	23.5% (43)	51.7% (102)	34.0% (68)	38.0% (76)	37.1% (289)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

From Table 34 it is seen that over half of the dwellings in Esa Oke have no latrine of their own or one they could share with another dwelling. These people living in these dwilings use the surrounding 'bush' for the purpose of defaecation. Public latrines were not found in the Ilesha, Esa Oke and Mansa areas. In Namitambo occupants of one dwelling used a public latrine which was in the health centre compound. It is also worth noting that except in Mansa, in the other three areas only about a third of the dwellings had their own latrines. Even where each dwelling had its own latrine this very often was not used by all the occupants of the dwellings. Some of the adults would still prefer the 'bush' and some of the children would not be able to use the adult type of latrines. These children would defaecate in the garden. Evidence of this was seen during the present study.

TABLE 35

DISTRIBUTION OF DWELLINGS BY TYPE OF LATRINE BY AREA.

TYPE LATRINE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Flush	1.1% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)
Bucket	5.5% (10)	0.0% (0)	1.0% (2)	0.0% (0)	1.6% (12)
Pit	69.9% (128)	48.2% (95)	65.0% (130)	62.0% (124)	61.2% (477)
No latrine	23.5% (43)	51.8% (102)	34.0% (68)	38.0% (76)	37.0% (289)
TOTAL	100.0% (183)	100.0% (197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 35.

Except for the very small percentage of dwellings that had a flush type of latrine in Ilesha, and the 5.5% and 1.0% respectively of the dwellings in Ilesha and Namitambo that had the bucket type of latrine, the majority of dwellings in all areas had a pit latrine. The squatting plate in these latrines were of the adult type and children under five were not encouraged to use them for fear that they may fall into the latrine pit.

TABLE 36

DISTRIBUTION OF DWELLINGS BY MODE OF REFUSE DISPOSAL BY AREA.

METHOD OF REFUSE DISPOSAL	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Dump in special area	3.8% (7)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (7)
Dump anywhere	96.2% (176)	100.0% (197)	100.0% (200)	100.0% (200)	99.1% (773)
TOTAL	100.0% (183)	100.0%)197)	100.0% (200)	100.0% (200)	100.0% (780)

Table 36.

Except in the case of seven dwellings in Ilesha (3.8%) all other dwellings in all areas did not have a suitable method for refuse disposal. Refuse was dumped at any point which was found convenient. The refuse was left exposed to the elements and often provided food for dogs and birds. This resulted in the rubbish being scattered around in the garden. The decaying rubbish also provided a culture medium for disease causing organisms.

TABLE 37

DISTRIBUTION OF DWELLINGS BY ANIMALS KEPT IN THE COMPOUND OF THE DWELLING BY AREA

ANIMALS KEPT IN DWELLINGS COMPOUND	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Goats	48.0% (87)	52.0% (96)	72.0% (142)	28.0% (55)	10.0% (20)	90.0% (180)	0.5% (1)	99.5% (199)	32.0% (250)	68.0% (530)
Poultry	60.0% (110)	40.0% (73)	81.0% (160)	19.0% (37)	32.0% (63)	68.0% (137)	26.0% (52)	74.0% (148)	49.0% (385)	51.0% (395)
Pigs	1.0% (1)	99.0% (182)	0.0% (0)	100.0% (197)	4.0% (8)	96.0% (192)	0.0% (0)	100.0% (200)	1.0% (9)	99.0% (771)
Dogs	3.0% (5)	97.0% (178)	0.0% (0)	100.0% (197)	0.5% (1)	99.5% (199)	0.5% (1)	99.5% (199)	1.0% (7)	99.0% (773)
Cattle	0.0% (0)	100.0% (183)	0.0% (0)	100.0% (197)	0.5% (1)	99.5% (199)	0.0% (0)	100.0% (200)	0.5% (1)	99.9% (779)

Table 37.

Many of the occupants of the dwellings visited reared domestic animals as a source of income, for food or as pets. Poultry was seen to be the commonest domestic animal in all areas of study.

In Ilesha 60.0%, Esa Oke 81.0%, Namitambo 32.0% and in Mansa 26.0% of occupants of the dwellings reared poultry. Goats were the next common. 48.0% in Ilesha, 72.0% in Esa Oke and 10.0% of the occupants of dwellings in Namitambo reared goats.

CHARACTERISTICS OF ALL FAMILIES

TABLES 38 - 50.

TABLE 38

DISTRIBUTION OF FAMILIES WITH CHILDREN UNDER FIVE BY NUMBER OF CHILDREN UNDER FIVE PER FAMILY BY AREA.

CHILDREN UNDER FIVE PER FAMILY	AREA				
	FAMILIES ILESHA (NIGERIA)	FAMILIES ESA-OKE (NIGERIA)	FAMILIES NAMITAMBO (MALAWI)	FAMILIES MANSA (ZAMBIA)	FAMILIES ALL AREAS
1	69.4% (224)	66.6% (199)	73.4% (148)	57.8% (123)	66.9% (694)
2	26.9% (87)	31.4% (94)	24.3% (49)	38.0% (81)	30.0% (311)
3	3.7% (12)	2.0% (6)	2.3% (5)	3.7% (8)	3.0% (31)
4	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
5	0.0% (0)	0.0% (0)	0.0% (0)	0.5% (1)	0.1% (1)
TOTAL FAMILIES	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 38 shows the distribution of families with children under five by number of children under five per family for each area. In Ilesha and Esa Oke and Namitambo all families had one, two or at the most three children under the age of five. However in Mansa this situation prevailed except in the case of one family where there were five children under the age of five. This included one pair of twins. It is interesting to note that even though some families had up to three children under the age of five that yet the median value for all areas was 1. 69.4% in Ilesha, 66.6% in Esa Oke, 73.4% in Namitambo and 57.8% families in Mansa had only one child under the age of five.

TABLE 39

DISTRIBUTION OF FAMILIES BY PRESENCE OF PARENTS BY AREA.

PARENTS OF CHILD	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Both alive	98.2% (317)	96.7% (289)	99.0% (200)	99.5% (212)	98.2% (1018)
Mother dead	0.3% (1)	0.3% (1)	0.0% (0)	0.0% (0)	0.2% (2)
Father dead	1.2% (4)	3.0% (9)	1.0% (2)	0.5% (1)	1.5% (16)
Both dead	0.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

TABLE 40

DISTRIBUTION OF FAMILIES BY WHICH PARENTS LIVES IN DWELLING BY AREA.

PARENT LIVING IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Mother only	44.5% (143)	34.0% (103)	46.0% (92)	17.0% (37)	36.0% (375)
Father only	1.0% (3)	0.7% (2)	0.0% (0)	1.0% (2)	1.0% (7)
Both	51.5% (166)	64.0% (190)	52.0% (106)	80.0% (170)	61.0% (632)
Neither parent	3.0% (11)	1.3% (4)	2.0% (4)	2.0% (4)	2.0% (23)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

In all four areas of study it is seen that very few children had lost one or both parents. (Table 39). In the entire study there was only one family where the children were orphans. This was a family in Ilesha. In 1.2% families in Ilesha, 3.0% families in Esa Oke, 1.0% families in Namitambo and o.5% families in Mansa the father was dead. One family each in Ilesha and Esa Oke were seen where the mother was dead.

From Table 39 it is seen that in all areas nearly all families had both parents living. However looking at Table 40 it is seen that in many cases the children live with one parent only. For example in Ilesha in 44.5% of families, in Esa Oke 34.0% of families, in Namitambo 46.0% of families and in Mansa 17.0% of families the children live with their mother only.
It is interesting to note that very few children live with their father only. This situation is seen only in 1.0% of the families in Ilesha and Mansa and in 0.7% in Esa Oke. 2.0% of the children live with neither parent and are looked after by a guardian. Often this is a grandmother or an aunt.

TABLE 41

DISTRIBUTION OF FAMILIES BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.

NUMBER OF CHILDREN BORN TO MOTHER	AREA				
	ILESHA (NIGERIA)	ESA-OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	16% (53)	13% (39)	24% (47)	16% (33)	17% (172)
2	20% (64)	15% (44)	17% (35)	18% (38)	17% (181)
3	19% (61)	13% (39)	9% (19)	14% (29)	14% (148)
4	19% (60)	16% (48)	9% (19)	12% (25)	15% (152)
5	13% (41)	15% (45)	14% (27)	11% (24)	13% (137)
6	8% (25)	12% (36)	6% (13)	10% (22)	9% (96)
7	2% (8)	7% (21)	8% (17)	7% (14)	6% (60)
8 and over	3% (11)	9% (27)	13% (25)	12% (28)	9% (91)
TOTAL	100% (323)	100% (299)	100% (202)	100% (213)	100% (1037)

Table 41.

The mothers taken into consideration were those who, at the time of the study had at least one child under the age of five. Hence it could be expected that the mothers would tend to be of the younger age groups. Therefore it is not surprising that the modal value was low for the number of children born to mother, i.e. two in Ilesha, four in Esa Oke, one in Namitambo and one in Mansa. However 9% of all mothers had eight or more children.

Though the mothers were asked the total number of children born, i.e. both living and dead, the author felt that some mothers only included those children who were alive. Hence these figures could underestimate parity.

TABLE 42

DISTRIBUTION OF FAMILIES BY UNDERSTANDING OF PURPOSE OF IMMUNIZATION BY AREA.

PURPOSE OF IMMUNISATION	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
For good health	78.0% (251)	16.0% (49)	0.0% (0)	0.0% (0)	29.0% (300)
To prevent disease	3.0% (11)	65.7% (196)	63.5% (128)	83.0% (176)	29.0% (511)
Other	18.0% (58)	18.0% (53)	36.0% (73)	17.0% (37)	21.5% (221)
Do not know	1.0% (3)	0.3% (1)	0.5% (1)	0.0% (0)	0.5% (5)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

TABLE 43

DISTRIBUTION OF FAMILIES BY TYPE OF MILK THOUGHT SUITABLE FOR YOUNG BABIES BY AREA.

TYPE MILK SUITABLE FOR YOUNG BABIES 0 - 3 MONTHS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	86.5% (279)	84.2% (251)	62.0% (125)	90.5% (193)	82.0% (848)
Artificial milk	6.0% (20)	10.3% (31)	33.0% (67)	3.0% (6)	12.0% (124)
Both	6.0% (20)	5.2% (16)	3.5% (7)	0.0% (0)	4.0% (43)
Do not know	1.5% (4)	0.3% (1)	1.5% (3)	6.5% (14)	2.0% (22
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

The question 'What is the purpose of vaccination?' evoked a variety of responses (Table 42). A small percentage (0.5% for all areas taken together) said that they did not know the reason for vaccinations. In Esa Oke Namitambo and Mansa 65.7% 63.5% and 83.0% respectively answered that vaccinations were given in order to prevent disease. Many of them were able to name at least some of the diseases against which their children could be immunised. In Ilesha only 3.0% answered similarly. The majority of answers in Ilesha were "in order to have good health". This could taken in its broadest sense convey the right meaning. After all the ultimate purpose of immunisation is to keep the child free of illness. However, it was felt that the answers received in Ilesha indicated that immunisation was looked upon as a "tonic or vitamin" to good health. It could be that the health education talks carried out in Ilesha conveyed this information about immunisation. Between 17 - 36% of the answers received from the areas were incorrect. These answers ranged from 'to control fits or convulsions', 'to prevent swelling', 'to prevent malnutrition', 'for the child to get stronger', 'for ear ache', 'for fever' etc. Some of these answers clearly indicated that there was some confusion between injections given for specific diseases, for example anti-biotics and anti convulsants and "injectable vaccines", such as DPT and BCG. The mothers were at times unable to appreciate the difference between these two types of "injections"

<u>Table 43</u>. The spokesman for each family in the study was asked what milk he or she felt was most suitable for an infant under the age of three months. The majority gave breast milk as the answer, i.e. 86.5% in Ilesha, 84.2% in Esa Oke, 62.0% in Namitambo and 90.5% in Mansa. However in Namitambo 33.0% gave artificial milk as the answer. This was in contrast to the other

areas where only between 3.0% and 10.3% gave artificial milk as the answer. A small percentage did not know which milk was most suitable and a further few said both breast milk and artificial milk should be given.

Table 44.

The mode age at which solids were introduced into the child's diet was six months in Ilesha and Mansa and five months and four months respectively in Esa Oke and Namitambo.

However, it must be noted that 4.3% of families introduced solids into a child's diet only after the age of 1 year.

In communities such as these where malnutrition is rampant, every effort must be made to teach mothers the needs of supplementing breast milk with nutritious foods at an early age.

TABLE 44.

DISTRIBUTION OF FAMILIES BY AGE (IN MONTHS) AT WHICH SOLIDS FIRST INTRODUCED INTO CHILD'S DIET BY AREA.

AGE (IN MONTHS) AT WHICH SOLIDS FIRST GIVEN	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	0.0% (0)	0.0% (0)	0.5% (1)	0.0% (0)	0.1% (1)
2	0.6% (2)	0.0% (0)	1.0% (2)	0.5% (1)	0.5% (5)
3	3.7% (12)	16.7% (50)	8.4% (17)	3.8% (8)	8.4% (87)
4	6.8% (22)	7.4% (22)	29.2% (59)	10.3% (22)	12.1% (125)
5	18.9% (61)	32.1% (96)	27.7% (56)	10.8% (23)	22.8% (236)
6	22.3% (72)	15.7% (47)	23.7% (48)	55.8% (119)	27.6% (286)
7	21.7% (70)	12.0% (36)	3.5% (7)	8.9% (19)	12.7% (132)
8	12.4% (40)	6.7% (20)	2.0% (4)	1.9% (4)	6.5% (68)
9	3.7% (12)	2.7% (8)	0.0% (0)	1.4% (3)	2.2% (23)
10	1.2% (4)	0.7% (2)	0.5% (1)	0.5% (1)	0.8% (8)
11	0.6% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)
12 and over	8.1% (26)	5.7% (17)	0.0% (0)	0.9% (2)	4.3% (45)
Unknown	0.0% (0)	0.3% (1)	3.5% (7)	5.2% (11)	1.8% (19)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

TABLE 45.

DISTRIBUTION OF *FAMILIES BY REASONS GIVEN FOR CHILDREN ATTENDING UNDER FIVES CLINIC BY AREA.

REASONS FOR CLINIC ATTENDANCE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Treatment only	35.0% (100)	23.2% (62)	49.3% (69)	22.3% (40)	31.1% (271)
Weighing only	0.4% (1)	0.0% (0)	3.6% (5)	44.7% (80)	9.9% (86)
Treatment and weighing	14.7% (42)	27.3% (73)	1.4% (2)	0.6% (1)	13.5% (118)
Treatment and Health Education	1.0% (3)	30.4% (81)	5.0% (7)	0.0% (0)	10.4% (91)
Treatment and Immunisation	13.1% (37)	3.3% (9)	4.3% (6)	0.0% (0)	6.0% (52)
Other groups of reasons	35.8% (102)	15.8% (42)	36.4% (51)	32.4% (58)	29.1% (253)
TOTAL	100.0% (285)	100.0% (267)	100.0% (140)	100.0% (179)	100.0% (871)

*Families where some or all of the children under the age of five attend the under fives clinic.

Table 45.

"For treatment" appeared to be the main reason for mothers bringing their children to the Under Fives Clinic. It is interesting to note that treatment and health education was given as a reason by 30.4% of mothers in Esa Oke, while very few mothers in the other three areas mentioned health education as a reason for clinic attendance.

Immunisation, on the whole was not considered as an incentive for bringing children to the Under Fives Clinic. It is worth noting that 44.7% of mothers in Mansa took their children to the clinic for weighing only.
"Other group of reasons" in the main consisted of a variety of combinations of the above mentioned reasons.

Table 46.

This table gives the reasons for not attending Under Fives Clinic. The answer most frequently was that "it was not necessary" to take a child to the clinic. Coupled with the findings in table 45 where most mothers who attended the Under Fives Clinic did so when their children were ill, it is seen that the mothers consider the Under Fives Clinic as giving curative treatment only. It is interesting to note that all mothers who did not attend the clinic in Mansa and Namitambo had still heard of the clinic.

TABLE 46.

DISTRIBUTION OF *FAMILIES BY REASONS GIVEN FOR THEIR CHILDREN NOT ATTENDING UNDER FIVES CLINIC BY AREA.

REASONS FOR NON ATTENDANCE AT UNDER FIVES CLINIC	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Did not know of clinic	5.3% (2)	9.4% (3)	0.0% (0)	0.0% (0)	3.0% (5)
Too far/ inconvenient	0.0% (0)	0.0% (0)	12.9% (8)	31.4% (11)	11.4% (19)
Not necessary	39.5% (15)	15.6% (5)	66.1% (41)	22.9% (8)	41.3% (69)
Child not ill/ too small/too old	10.5% (4)	6.2% (2)	8.1% (5)	8.6% (3)	8.4% (14)
Other	26.3% (10)	34.4% (11)	9.7% (6)	17.1% (6)	19.7% (33)
No reason given	18.4% (7)	34.4% (11)	3.2% (2)	20.0% (7)	16.2% (27)
TOTAL	100.0% (38)	100.0% (32)	100.0% (62)	100.0% (35)	100.0% (167)

* Families where some or all children under five do not attend the Under Fives Clinic.

TABLE 47

DISTRIBUTION OF FAMILIES BY ANTE-NATAL CLINIC ATTENDANCE OF MOTHER BY AREA.

ANTE-NATAL CLINIC ATTENDANCE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	87% (280)	91% (270)	88% (177)	85% (181)	88% (908)
No	13% (43)	9% (29)	12% (25)	15% (32)	12% (129)
TOTAL	100% (323)	100% (299)	100% (202)	100% (213)	100% (1037)

TABLE 48

DISTRIBUTION OF *FAMILIES BY REASONS GIVEN FOR ANTE NATAL CLINIC ATTENDANCE BY AREA.

REASONS GIVEN FOR ANTE NATAL CLINIC ATTENDANCE	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Routine visits	72.5% (203)	91.1% (246)	89.2% (158)	82.3% (149)	83.3% (756)
Only for treatment (when mother was unwell)	26.1% (73)	8.5% (23)	10.2% (18)	17.7% (32)	16.1% (146)
Other	0.0% (0)	0.4% (1)	0.0% (0)	0.0% (0)	0.1% (1)
Did not answer	1.4% (4)	0.0% (0)	0.6% (1)	0.0% (0)	0.5% (5)
TOTAL	100.0% (280)	100.0% (270)	100.0% (177)	100.0% (181)	100.0% (908)

* applies to those families where the mother attended the ante-natal clinic in her last pregnancy.

Table 47.

This table shows that over 85% or more mothers in each area attend the ante natal clinic during a pregnancy. The highest attendance is recorded in Esa Oke where 91% of mothers attend.

Table 48 shows that in all areas over 70% of mothers who attended the clinic did so for routine check visits. It is interesting to note that during a pregnancy a mother accepts the need for attending the ante natal clinic for routine preventive measures, but in the case of her children she does not always appreciate the need for taking them to Under Fives Clinics in order to obtain immunisations and other preventive measures available at these clinics.

TABLE 49.

DISTRIBUTION OF FAMILIES BY WHERE TREATMENT WOULD BE SOUGHT IN AN EMERGENCY BY AREA.

EMERGENCY TREATMENT SOUGHT AT	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	(ZAMBIA)	ALL AREAS
Hospital	83.0% (268)	9.7% (29)	1.5% (3)	90.1% (192)	47.4% (492)
Home of midwife/ nurse	3.1% (10)	62.6% (187)	0.0% (0)	0.0% (0)	19.0% (197)
Health Centre	0.0% (0)	0.3% (1)	61.3% (124)	0.0% (0)	12.0% (125)
Home remedies	5.0% (16)	19.1% (57)	0.5% (1)	0.0% (0)	7.1% (74)
"Local doctor"	2.8% (9)	0.3% (1)	14.9% (30)	0.5% (1)	4.0% (41)
"Local doctor" or hospital/ health centre	0.0% (0)	5.0% (15)	19.8% (40)	6.6% (14)	6.7% (69)
Other	1.2% (4)	2.0% (6)	2.0% (4)	0.0% (0)	1.4% (14)
Did not answer	4.9% (16)	1.0% (3)	0.0% (0)	2.8% (6)	2.4% (25)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 49.

In Ilesha and Mansa where the areas are served by a general hospital, it is seen that the majority of mothers seek emergency treatment at hospital. However 2.8% of families in Ilesha would consult a "local doctor" first. In Namitambo 14.9% families would in an emergency always consult a "local doctor". While 19.8% of families in Namitambo specified that for certain emergencies they would seek treatment from a health centre or hospital providing 'western' treatment, and for other conditions they would seek treatment from the local doctor. However, they did not specify the diseases that fell into the two categories.

TABLE 50.

DISTRIBUTION OF FAMILIES BY MODE OF TRAVEL TO UNDER FIVES CLINIC BY AREA.

MODE OF TRAVEL TO CLINIC	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Mammy wagon (local 'bus)	0.3% (1)	7.4% (22)	0.0% (0)	0.0% (0)	2.2% (23)
Walk	47.7% (154)	92.0% (275)	75.7% (153)	83.6% (178)	73.3% (760)
Taxi or private car	35.0% (113)	0.0% (0)	0.0% (0)	0.0% (0)	10.9% (113)
Bicycle	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (1)	0.1% (1)
Walk or car/taxi	17.0% (55)	0.6% (2)	24.3% (49)	16.0% (34)	13.5% (140)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 50.

This table shows that the majority of mothers in all areas walk to the clinic.

As a result during the rainy season, when conditions are not conducive to walking, a marked reduction in clinic attendance could be expected.

CHARACTERISTICS OF ALL CHILDREN

TABLES 51 - 68.

AGE DISTRIBUTION OF THE CHILDREN SEEN IN THE STUDY.

It was possible to accurately establish the ages of 1393 of the 1414 children seen in the study. Age was established by means of the 'Road-to-Health' cards when available. If these cards were not available then evidence of date of birth was sought by looking at baptismal records or other available documents. Age was ~~accurately~~ established in 420 of the 434 children seen in Ilesha, 402 of the 405 children in Esa Oke, 259 of the 261 children in Namitambo and in 312 of the 314 children in Mansa.

In all four areas it was seen that the numbers of children seen in the younger age groups were greater than the numbers of children seen in the older age groups. For example 24.8% of the children seen in Ilesha were aged between 0 - under 12 months while in the 48 - under 60 months age group there were 17.3% of all children. Table 51. In Namitambo for the 0 - under 1 year age group there were 34.7% of the study children while in the 48 - under 60 months age group there were only 8.2% of all the study children. This trend is seen in the other two areas as well.

Figure 13 shows the distribution of children by age, for all areas. When the children are grouped together it is still noticeable that there are far more children in the 0 - 12 months age group than in the 48 - 60 months age group.

. The results in Table 51 have been plotted in Figure 13 to show the distribution of children by age for each area. In Ilesha and Esa Oke the differences in number of children between the 0 - 12 months group and the 48 - 60 month groups are not as marked as that seen in Mansa and Namitambo for the same age groups.

FIG. 13.


NO OF CHILDREN
0
10
20
30
40
50
60
70
80
90
10
20
30
40
50
60
AGE IN MONTHS

AGE DISTRIBUTION (IN MONTHS) OF CHILDREN IN THE 4 AREAS

FIG. 14.

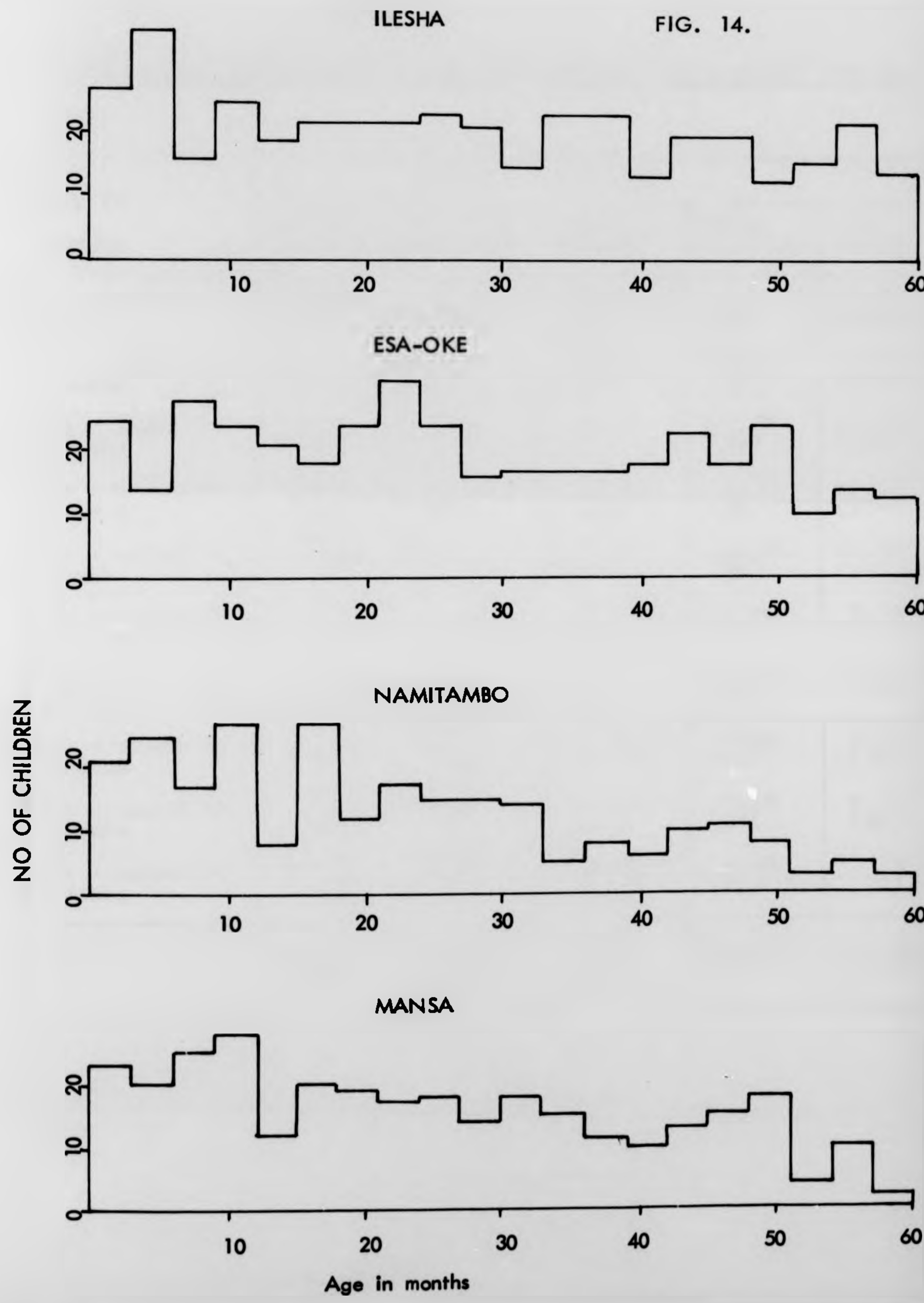


TABLE 51.

DISTRIBUTION OF CHILDREN UNDER FIVE BY AGE (IN MONTHS) AND BY AREA.

AGE IN MONTHS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0 - under 6 months	15.0% (63)	9.6% (39)	17.7% (46)	13.8% (43)	13.7% (191)
6 - under 12 months	9.8% (41)	13.0% (52)	17.0% (44)	17.0% (53)	13.6% (190)
12 - under 18 months	9.8% (41)	9.6% (39)	13.5% (35)	10.2% (32)	10.6% (147)
18 - under 24 months	10.5% (44)	13.7% (55)	11.2% (29)	11.5% (36)	11.8% (164)
24 - under 30 months	10.5% (44)	10.0% (40)	11.6% (30)	10.3% (32)	10.5% (146)
30 - under 36 months	9.0% (38)	8.5% (34)	7.3% (19)	10.6% (33)	8.9% (124)
36 - under 42 months	8.6% (36)	8.7% (35)	5.4% (14)	6.7% (21)	7.6% (106)
42 - under 48 months	9.5% (40)	10.2% (41)	8.1% (21)	9.0% (28)	9.3% (130)
48 - under 54 months	6.8% (29)	8.5% (34)	4.3% (11)	7.1% (22)	6.9% (96)
54 - under 60 months	10.5% (44)	8.2% (33)	3.9% (10)	3.8% (12)	7.1% (99)
TOTAL	100.0% (420)	100.0% (402)	100.0% (259)	100.0% (312)	100.0% (1393)

TABLE 52.

DISTRIBUTION OF CHILDREN UNDER FIVE BY SEX AND BY AREA.

SEX	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Males	52.1% (226)	52.6% (213)	50.2% (131)	45.9% (144)	50.5% (714)
Females	47.9% (208)	47.4% (192)	49.8% (130)	54.1% (170)	49.5% (700)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

The sex distribution of the children showed a male preponderance (Table 52). In Namitambo they were almost identical with the values obtained from all areas. However in Ilesha and Esa Oke though there is an excess of males (similar to the overall figure) the ratios are slightly different, i.e. the percentage of males to females is 52.1% to 47.9% in Ilesha, 52.6% to 47.4% in Esa Oke. In Mansa a reversal of the percentages is seen. Here there is a preponderance of females, i.e. males to females of 45.9% to 54.1%

TABLE 53.

DISTRIBUTION OF CHILDREN UNDER FIVE BY SEX AT EACH AGE BY AREA

AGE IN MONTHS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
0 - under 12 months	50% (52)	50% (52)	54% (49)	46% (42)	48% (43)	52% (47)	43% (41)	57% (55)	49% (185)	51% (196)
12 - under 24 months	52% (44)	48% (41)	50% (47)	50% (47)	55% (35)	45% (29)	49% (33)	51% (35)	51% (159)	49% (152)
24 - under 36 months	57% (47)	43% (35)	55% (41)	45% (33)	63% (31)	37% (18)	55% (36)	45% (29)	57% (155)	43% (115)
36 - under 48 months	53% (40)	47% (36)	55% (42)	45% (34)	40% (14)	60% (21)	37% (18)	63% (31)	48% (114)	52% (122)
48 - under 60 months	51% (37)	49% (36)	49% (33)	51% (34)	33% (7)	67% (14)	47% (16)	53% (18)	48% (93)	52% (102)

Table 53.

In the sex distribution of children at each age, it is noted that in Ilesha at every age group there is a slight preponderance of males over females. In Esa Oke too a pattern similar to Ilesha is seen except in the 48 - under 60 months age group where a slight excess of females is seen.

In Mansa, the over all preponderance of females noted in Table 52 is seen at each age group except the 24 - under 36 months group where males are in excess forming 55% of children in that age.

Table 54.

The distribution of children by sex by age for each area is shown in Table 54. In Ilesha and Esa Oke where the distribution of children at each age was fairly uniform, the sex distribution appears to conform to the same pattern, i.e. In Ilesha males and females are seen to be distributed fairly evenly at each age. The males range from 16.8% to 23.7% and the females 17.5% to 26.0% at each age.

In Namitambo and Mansa as pointed out earlier in Figure 14 the numbers of children at each age decreases with increasing age. For example in Mansa 32.8% children under 1 year are females while only 10.7% of children in the 4 - under 5 age group are females.

Table 53.

In the sex distribution of children at each age, it is noted that in Ilesha at every age group there is a slight preponderance of males over females. In Esa Oke too a pattern similar to Ilesha is seen except in the 48 - under 60 months age group where a slight excess of females is seen.

In Mansa, the over all preponderance of females noted in Table 52 is seen at each age group except the 24 - under 36 months group where males are in excess forming 55% of children in that age.

Table 54.

The distribution of children by sex by age for each area is shown in Table 54. In Ilesha and Esa Oke where the distribution of children at each age was fairly uniform, the sex distribution appears to conform to the same pattern, i.e. In Ilesha males and females are seen to be distributed fairly evenly at each age. The males range from 16.8% to 23.7% and the females 17.5% to 26.0% at each age.

In Namitambo and Mansa as pointed out earlier in Figure 14 the numbers of children at each age decreases with increasing age. For example in Mansa 32.8% children under 1 year are females while only 10.7% of children in the 4 - under 5 age group are females.

TABLE 54.

DISTRIBUTION OF CHILDREN UNDER FIVE BY SEX BY AGE AND BY AREA.

AGE IN MONTHS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
0 - under 12 months	23.7% (52)	26.0% (52)	23.1% (49)	22.1% (42)	33.1% (43)	36.5% (47)	28.5% (41)	32.8% (55)	26.2% (185)	28.6% (196)
12 - under 24 months	20.0% (44)	20.5% (41)	22.1% (47)	24.8% (47)	26.9% (35)	22.4% (29)	22.9% (33)	20.8% (35)	22.5% (159)	22.1% (152)
24 - under 36 months	21.3% (47)	17.5% (35)	19.4% (41)	17.4% (33)	23.8% (31)	14.0% (18)	25.0% (36)	17.3% (29)	21.9% (155)	16.7% (115)
36 - under 48 months	18.2% (40)	18.0% (36)	19.8% (42)	17.8% (34)	10.8% (14)	16.3% (21)	12.5% (18)	18.4% (31)	16.2% (114)	17.8% (122)
48 - under 60 months	16.8% (37)	18.0% (36)	15.6% (33)	17.9% (34)	5.4% (7)	10.8% (14)	11.1% (16)	10.7% (18)	13.2% (93)	14.8% (102)
TOTAL	100.0% (220)	100.0% (200)	100.0% (212)	100.0% (190)	100.0% (130)	100.0% (129)	100.0% (144)	100.0% (168)	100.0% (706)	100.0% (687)

TABLE 55

DISTRIBUTION OF CHILDRENBY THEIR HEALTH ON DAY OF SURVEY BY AREA.

HEALTH OF CHILD ON DAY OF SURVEY	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Child ill	7% (29)	8% (34)	20% (53)	10% (30)	10% (146)
Child well	93% (405)	92% (371)	80% (208)	90% (284)	90% (1268)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)	100% (1414)

TABLE 56

DISTRIBUTION OF CHILDREN UNDER FIVE BY SKIN LESIONS SEEN ON DAY OF INTERVIEW AND BY AREA.

SKIN LESIONS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Present	8.3% (36)	4.0% (16)	10.3% (27)	5.7% (18)	6.8% (97)
Absent	91.7% (398)	96.0% (389)	89.7% (234)	94.3% (296)	93.2% (1317)
All	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 55. The mother or guardian was asked if the child was well on the day of survey. Due to the conditions under which the survey was carried out no physical examination was possible to confirm the replies to the above. Answers were obtained from the history given. The possibility of the mother exaggerating the illness in a child with the hope that the members of the survey team might provide treatment was also kept in mind. 7.0%, 8.0%, and 10.0% of the children in Ilesha, Esa Oke and Mansa respectively were said to be ill at the time of the survey. However, in Namitambo 20.0% of the children were reported as being sick at the time of the survey. This was more than twice the number reported sick in each of the other areas.

"Illness" ranged from headache, fever vomiting diarrhoea, scabies, cough, malaria, 'lack of appetite' to marasmus kwashiorkor, chicken pox and measles.

Table 56. Skin disorders in childhood can be a cause of considerable discomfort and morbidity. Infections with bacteria, fungi and infestations were the most frequent causes of skin disease in children. 6.8% of all children seen had some form of skin lesion. The highest was in Namitambo with 10.3% and lowest in Esa Oke 4.0%

TABLE 57.

DISTRIBUTION OF CHILDREN BY NUMBER OF ATTACKS OF DIARRHOEA (IN PAST THREE MONTHS) BY AREA.

NUMBER OF ATTACKS OF DIARRHOEA	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	83.0% (359)	86.8% (351)	64.0% (167)	57.0% (179)	74.9% (1056)
1	6.0% (24)	6.0% (25)	28.0% (72)	39.0% (123)	17.0% (244)
2	9.0% (41)	6.0% (24)	8.0% (22)	3.0% (10)	7.0% (97)
3	1.0% (5)	0.5% (2)	0.0% (0)	1.0% (2)	0.6% (9)
4 and over	1.0% (5)	0.7% (3)	0.0% (0)	0.0% (0)	0.5% (8)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 57.

The mother (or guardian) for each child was asked if the child had in the previous three months suffered from diarrhoea. 'Diarrhoea' in this instance was defined as the passage of two or more loose stools per day. Attacks of diarrhoea was taken to mean the number of different occasions when the child had diarrhoea. If the child had diarrhoea continuously then that would be one attack of diarrhoea. If after a break of over seventy two hours the child developed diarrhoea again then this was considered another attack of diarrhoea. Overall for the four areas 74.9% of the children did not give a history of diarrhoea in the past three months, i.e. three months preceding the survey. 9% of the children in Ilesha 6% of the children in Esa Oke 8% of children in Namitambo and 3% of the children in Mansa had suffered two attacks of diarrhoea in the three months prior to the time of survey. However, since the mother had to recall events that occurred up to three months prior to the time of survey it was not possible to give much weight to this information. Also it is not always possible when recalling events of the past to be able to definitely decide that the event in question occurred in the last three months and not in the previous three months. In spite of these shortcomings it was possible to elicit from a history the fact that 25.1% of the children had suffered from diarrhoea in the three months prior to the survey.

TABLE 58.

DISTRIBUTION OF CHILDREN BY HISTORY OF MEASLES AND BY AREA

HISTORY OF MEASLES	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	27.9% (121)	40.0% (162)	42.1% (110)	27.1% (85)	33.8% (478)
No	65.2% (283)	59.8% (242)	57.5% (150)	70.7% (222)	63.4% (897)
Do not know	6.9% (30)	0.2% (1)	0.4% (1)	2.2% (7)	2.8% (39)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 58.

A past history of measles in the child was obtained from the mother or guardian. There were problems encountered in describing to the mother the disease measles. Wherever possible the mothers history was checked with information in the 'Road-to Health' cards. 33% of children in all areas gave a past history of measles. The ratio was as high as 42.1% in Namitambo.

A small percentage of mothers 2.8% for all areas did not know if their child had suffered from measles.

TABLE 59.

DISTRIBUTION OF CHILDREN BY HISTORY OF WHOOPING COUGH AND BY AREA.

HISTORY OF WHOOPING COUGH	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Yes	6.0% (26)	7.1% (29)	18.4% (48)	18.8% (59)	11.5% (162)
No	90.6% (393)	92.6% (375)	80.8% (211)	78.0% (245)	86.5% (1224)
Do not know	3.4% (15)	0.3% (1)	0.8% (2)	3.2% (10)	2.0% (28)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 59.

Each mother (or guardian) was asked if any of the children under the age of five in the family had suffered from whooping cough. It was difficult at times to explain to the mother what whooping cough was. This problem was often overcome by demonstrating a 'cough with a whoop'. It is noted that almost 19% of children in Mansa and Namitambo had suffered from whooping cough. Occasionally there was a note in the 'Road-to-Health' card to the effect that the child had suffered from whooping cough, but in most cases the information was obtained from parent or guardian. A few children who gave a history of whooping cough were also seen to have had Diptheria Pertussis

Tetanus (DPT) vaccination. Since information on age when the child had whooping cough was not sought (this was done deliberately as it was felt that this information might be inaccurate for it involved recall of an incident which occurred sometime in the past) it was not possible to establish if the child suffered from whooping cough before or after being given DPT.

TABLE 60.

DISTRIBUTION OF CHILDREN UNDER FIVE BY AGE BY NUMBER OF STOOLS PASSED IN THE TWENTY FOUR HOURS PRIOR TO SURVEY FOR ALL AREAS.

NUMBER OF STOOLS PASSED IN TWENTY FOUR HOURS PRIOR TO SURVEY	ALL AREAS			
	AGE			
	0 - under 6 months	6 - under 12 months	12 - under 18 months	18 months and over
0	6.8% (13)	3.2% (6)	8.8% (13)	4.3% (37)
1	18.9% (36)	23.3% (44)	21.8% (32)	16.8% (145)
2	30.5% (58)	37.0% (70)	36.1% (53)	40.6% (349)
3 and over	43.8% (83)	36.5% (69)	33.3% (49)	38.3% (330)
TOTAL	100.0% (190)	100.0% (189)	100.0% (147)	100.0% (861)

Table 60.

This table shows the distribution of children by number of stools passed by age, for all areas. Except in the age group 0 - under 6 months the modal value for the number of stools passed was two. This pattern was seen to be identical for all four areas. Therefore to simplify the presentation, a single table is constructed showing the distribution of the number of stools passed in the twenty four hours prior to survey for all areas. The answers could be considered accurate for the children in the younger age groups. However, the older children are less supervised by their mothers and hence the mothers may not be always aware of the number of times her older children defarcate per day.

It is noted, however, that none of the mothers refrained from answering this particular question.

TABLE 61.

This table shows the distribution of children by age by number of admissions to hospital for all areas.

It is seen that with increasing age the proportion of children who have never been admitted to hospital decreases. For example, 92% of children in the 0 - under 1 year age group have never been admitted to hospital while in the 4 - under 5 years of age group only 71% of children have escaped hospitalisation.

This pattern of course is to be expected. The older the child the more chance he or she would have had of contracting a disease which warrants hospitalisation.

The above pattern was experienced in all four areas of study. In order to simplify the presentation, table 61 has therefore been constructed for all areas taken together.

TABLE 61.

DISTRIBUTION OF CHILDREN BY AGE BY NUMBER OF ADMISSIONS TO HOSPITAL FOR ALL AREAS

AGE	NUMBER OF ADMISSIONS	ALL AREAS
Up to 1 year	0	92% (351)
	1	7% (26)
	2 and over	1% (4)
	TOTAL	100% (381)
1 - under 2 years	0	81% (251)
	1	16% (50)
	2 and over	3% (10)
	TOTAL	100% (311)
2 - under 3 years	0	78% (210)
	1	20% (55)
	2 and over	2% (5)
	TOTAL	100% (270)
3 - under 4 years	0	78% (59)
	1	18% (14)
	2 and over	4% (3)
	TOTAL	100% (76)
4 - under 5 years	0	71% (140)
	1	23% (44)
	2 and over	6% (11)
	TOTAL	100% (195)

TABLE 62.

DISTRIBUTION OF CHILDREN BY PRESENCE OF AN UMBILICAL HERNIA BY AREA.

	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Total children seen	434	405	261	314	1414
Umbilical hernia present	25% (108)	26% (105)	6% (16)	5% (16)	17% (245)

Table 62.

Umbilical herniae were fairly frequently seen in African children. All children were examined for the presence or absence of herniae. Overall 17% of the children were seen to have umbilical herniae. In the two West African areas i.e. Ilesha and Esa Oke 25% and 26% of the children respectively were seen to have umbilical herniae at the time of the study.

TABLE 63.

DISTRIBUTION OF CHILDREN UNDER FIVE BY CLINIC ATTENDANCE BY PRESENCE OF ROAD TO HEALTH CARD BY AREA.

CLINIC ATTENDANCE AND ROAD TO HEALTH CARD	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
N O					
(Never had a card)	13% (55)	9% (37)	32% (83)	16% (51)	16% (226)
Y E S	87%	91%	68%	84%	84%
(Card lost)	1% (5)	1% (3)	21% (55)	17% (54)	8% (117)
(Card not available)	6% (25)	5% (21)	5% (12)	7% (21)	6% (79)
(Cards seen)	80% (349)	85% (344)	42% (111)	60% (188)	70% (992)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)	100% (1414)

Table 63.

From this table it is seen that 13% of children in Ilesha, 9% in Esa Oke, 32% in Namitambo and 16% in Mansa have never attended an Under Fives Clinic, and therefore had never been issued with a 'Road-to-Health' card.

Those children who have attended the clinic, i.e. 87% in Ilesha, 91% in Esa Oke, 68% in Namitambo and 84% in Mansa fall into one of three categories as far as their 'Road-to-Health' card, on day of survey was concerned. Though all the children were issued with 'Road-to-Health' cards, on the day of the survey their cards could be -

1. Not available (for example locked away)
2. Lost
3. Seen

It is interesting that in Ilesha and Esa Oke the cards lost only amounted to 1% while in Mansa it was 17% and Namitambo 21%.

Morley has suggested that ideally a child should be brought to the Under Fives Clinic once a month in the first year of life and once in three months during the next four years. In an ideal situation if one takes Morley's suggestion, for the number of attendances at each year of age, as an optimum use of clinic facilities, then the simplest way to look at part played by distance in uptake of clinic factors would be to tabulate the frequency of clinic attendances of the children living at varying distances from the clinic, for each of the four areas. However, age is a factor in this. Younger children because of their age would not have had the opportunity of attending the clinic as many times as the children who are older. In order to simplify the presentation of such data some allowance has to be made for any difference in age structure for population of children living at different distances from the clinic and in different areas. This has been done taking Morley's schedule for clinic attendances, as what could be reasonably expected for children at each age attending the clinic. On this basis, for each clinic attender in the study, the expected number of clinic attendances was calculated (taking into account the age of the child.) For each child, with a 'Road-to-Health' card, the number of visits made to clinic was obtained from the card and this value was compared with the ideal number of visits the child should have made according to Morley's recommendation - Chart 1.

These values have been tabulated. For simplicity of presentation these percentages have been presented in four categories, i.e. at each age group the proportion of children attending the clinic 1 - 25%, 26 - 50%, 51 - 75% and over 75% of the optimum number of visits expected for the age group. For example, a child aged thirty months, if it had made fourteen or more visits then this would comprise 76% or more of the ideal number of visits recommended by Morley (Chart 1). If a child aged four months had visited the clinic four times then the number of visits would be 76% or more of the ideal number of visits for its age. If a child of the same age had made only two visits then this number of visits would be only 26 - 50% of the ideal number of visits for its age.

Table 64.

In this table the number of visits (if any) made by the child to the Under Fives Clinic have been compared with the ideal number of visits he should have made for his age. For example, in Ilesha 236 or 54% of children seen in the survey had made 76% or more of the ideal number of visits for their age, at the time of survey. Whereas in Namitambo only 14% of children had made 76% or more of the ideal number of visits for age. In 10%, 6%, 26% and 24% in Ilesha, Esa Oke, Namitambo and Mansa respectively the children were clinic attenders but their cards were not available on the day of survey. As such it was not possible to obtain the number of clinic visits made by these children.

CHART 1

IDEAL NUMBER OF VISITS TO CLINIC BY EACH AGE.

Age in Months	A 76% and over of ideal visits	B 51 - 75% of ideal visits	C 26 - 50% of ideal visits	D 1 - 25% of ideal visits
1	1			
2	2		1	
3	3	2	1	
4	4	3	2	1
5	4, 5	3	2	1
6	5, 6	4	3, 2	1
7	6, 7	4, 5	2, 3	1
8	8, 7	6, 5	4, 3	2, 1
9	7 - 9+	6, 5	4, 3	2, 1
10	8 - 10+	7, 6	3 - 5	2, 1
11	9 - 11+	6 - 8	3 - 5	2, 1
12	9 - 12+	7, 8	4 - 6	1 - 3
15	10 - 13+	7 - 9	4 - 6	1 - 3
18	11 - 14+	8 - 10	4 - 7	1 - 3
21	11 - 15+	8 - 10	4 - 7	1 - 3
24	13 - 16+	9 - 12	5 - 8	1 - 4
27	13 - 17+	9 - 12	5 - 8	1 - 4
30	14 - 18+	10 - 13	5 - 9	1 - 4
33	15 - 19+	10 - 14	5 - 9	1 - 4
36	16 - 20+	11 - 15	6 - 10	1 - 5
39	16 - 21+	11 - 15	6 - 10	1 - 5
42	17 - 22+	12 - 16	6 - 11	1 - 5
45	18 - 23+	12 - 17	6 - 11	1 - 5
48	19 - 24+	13 - 18	7 - 12	1 - 6
51	19 - 25+	13 - 18	7 - 12	1 - 6
54	20 - 26+	14 - 19	7 - 13	1 - 6
57	20 - 27+	14 - 19	7 - 13	1 - 6
60	21 - 28+	15 - 20	8 - 14	1 - 7

TABLE 64.

DISTRIBUTION OF CHILDREN UNDER FIVE BY FREQUENCY OF CLINIC ATTENDANCE BY AREA.

NUMBER OF VISITS AS A % IDEAL FOR AGE	A R E A			
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)
76 - 100%	54% (236)	74% (298)	14% (37)	20% (64)
51 - 75%	8% (33)	5% (20)	3% (9)	9% (29)
26 - 50%	9% (39)	3% (11)	11% (29)	16% (49)
1 - 25%	6% (26)	3% (14)	14% (36)	15% (46)
0% (i.e. clinic non-attender	13% (55)	9% (37)	32% (83)	16% (51)
Number of visits not known	10% (45)	6% (25)	26% (67)	24% (75)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)

TABLE 65.

DISTRIBUTION OF CHILDREN UNDER FIVE BY B.C.G. VACCINATION BY AREA.

B.C.G. VACCINATION	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Given	74% (322)	66% (269)	25% (66)	47% (149)	57% (806)
Not given	26% (112)	34% (136)	75% (195)	53% (165)	43% (608)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)	100% (1414)

Table 65.

Information on BCG vaccination was obtained for all survey children by examination of deltoid region of upper arm for BCG vaccination scar and/or information in the 'Road-to-Health' cards.

In Ilesha and Esa Oke the proportion of children given BCG is seen to be bigger than in Namitambo and Mansa. The lowest was in Namitambo with only 25% of children having received BCG vaccination.

TABLE 66.

DISTRIBUTION OF CHILDREN UNDER FIVE BY NUMBER OF OCCUPANTS PER ROOM BY AREA.

OCCUPANTS PER ROOM	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	5.5% (24)	0.7% (3)	3.0% (8)	6.0% (20)	4.0% (55)
2	23.0% (100)	19.0% (77)	29.0% (76)	38.0% (119)	26.1% (372)
3	36.3% (156)	35.0% (141)	37.0% (97)	28.0% (89)	34.0% (483)
4	24.0% (106)	25.1% (102)	19.0% (49)	15.0% (47)	21.3% (304)
5	7.0% (30)	18.0% (73)	5.0% (13)	7.0% (22)	10.0% (138)
6	4.0% (17)	1.2% (5)	3.5% (9)	3.0% (9)	3.0% (40)
7	0.0% (0)	1.0% (4)	1.5% (4)	1.0% (3)	0.8% (11)
8+	0.2% (1)	0.0% (0)	2.0% (5)	2.0% (5)	0.8% (11)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 66.

Except in Mansa the modal value for the number of occupants per room was three, i.e. three persons occupy one room. In Mansa the mode is two. However, it is worth noting that 154 children in Ilesha 184 in Esa Oke 80 in Namitambo and 86 in Mansa live in dwellings where there are four or more persons per room. In Namitambo and Mansa five

TABLE 66.

DISTRIBUTION OF CHILDREN UNDER FIVE BY NUMBER OF OCCUPANTS PER ROOM BY AREA.

OCCUPANTS PER ROOM	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	5.5% (24)	0.7% (3)	3.0% (8)	6.0% (20)	4.0% (55)
2	23.0% (100)	19.0% (77)	29.0% (76)	38.0% (119)	26.1% (372)
3	36.3% (156)	35.0% (141)	37.0% (97)	28.0% (89)	34.0% (483)
4	24.0% (106)	25.1% (102)	19.0% (49)	15.0% (47)	21.3% (304)
5	7.0% (30)	18.0% (73)	5.0% (13)	7.0% (22)	10.0% (138)
6	4.0% (17)	1.2% (5)	3.5% (9)	3.0% (9)	3.0% (40)
7	0.0% (0)	1.0% (4)	1.5% (4)	1.0% (3)	0.8% (11)
8+	0.2% (1)	0.0% (0)	2.0% (5)	2.0% (5)	0.8% (11)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 66.

Except in Mansa the modal value for the number of occupants per room was three, i.e. three persons occupy one room. In Mansa the mode is two. However, it is worth noting that 154 children in Ilesha 184 in Esa Oke 80 in Namitambo and 86 in Mansa live in dwellings where there are four or more persons per room. In Namitambo and Mansa five children in each area came from dwellings which had eight or more persons to a room, even though measurements for area of room were not collected, yet the degree of over-crowding would be high in the latter situation. Spread of diseases caused by droplet infection would be rapid in the presence of overcrowding.

TABLE 67.

DISTRIBUTION OF CHILDREN UNDER FIVE BY PARENTS BY AREA

PARENTS OF CHILD	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Both alive	98.7% (428)	96.8% (392)	99.2% (259)	99.7% (313)	98.4% (1392)
Mother dead	0.2% (1)	0.2% (1)	0.0% (0)	0.0% (0)	0.2% (2)
Father dead	0.9% (4)	3.0% (12)	0.8% (2)	0.3% (1)	1.3% (19)
Both dead	0.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 67.

This table indicates that a very high proportion of children in all areas have both their parents alive. This was seen to be the case in 98.4% of all children. It is noteworthy that of all 1414 children seen in the survey there was only one child who was orphaned.

TABLE 68.

DISTRIBUTION OF CHILDREN UNDER FIVE BY PERSON LIVING WITH CHILD IN DWELLING BY AREA.

PERSON LIVING WITH THE CHILD IN DWELLING	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (MALAWI)	ALL AREAS
Neither parent	2.5% (11)	1.0% (4)	1.5% (4)	1.6% (5)	1.7% (24)
Mother only	41.9% (182)	34.6% (140)	46.0% (120)	15.0% (47)	34.6% (489)
Father only	0.7% (3)	0.7% (3)	0.0% (0)	0.6% (2)	0.6% (8)
Both	54.9% (238)	63.7% (258)	52.5% (137)	82.8% (260)	63.1% (893)
TOTAL	100.0% (434)	100.0% (405)	100.0% (261)	100.0% (314)	100.0% (1414)

Table 68.

From this table it is seen that the majority of children in all areas live with both parents. However, within this group marked variations are seen. For example 52.5% of children in Namitambo and 82.8% children in Mansa live with both parents. Consequently in Mansa in contrast to the other areas, the proportion of children living with their mother only is low at 15%. The reasons for a child living with his or her mother only could be many. The parents may be divorced or separated, or the father could be working away from home. It is seen from Table 67 that the proportion of children who have lost their father through death is very small. Hence this reason at least could not account for a large proportion of children living with their mother only.

CHARACTERISTICS OF ALL FAMILIES BY UNDER

FIVES CLINIC ATTENDANCE OF CHILDREN

TABLES 69 - 74.

TABLE 69.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY AREA.

ATTENDANCE OF CHILDREN AT UNDER FIVES CLINIC	AREA				
	ILESHA FAMILIES	ESA OKE FAMILIES	NAMITAMBO FAMILIES	MANSA FAMILIES	ALL AREAS
All children under five in family attend	85.5% (276)	89.3% (266)	65.0% (131)	79.5% (170)	81.0% (843)
Only some children under five in family attend	3.0% (11)	0.7% (2)	9.0% (18)	8.0% (16)	5.0% (47)
No children under five in family attend	11.5% (36)	10.0% (31)	26.0% (53)	12.5% (27)	14.0% (147)
TOTAL	100.0% (323)	100.0% (299)	100.0% (202)	100.0% (213)	100.0% (1037)

Table 69.

All families taken taken into the survey, could be divided into the following three categories, depending on the Under Fives Clinic attendance of children in the family.

(1) Families where all children under the age of five attend the Under Fives Clinic. 85% families in Ilesha fall into this group while only 65.0% of the families in Namitambo are in this category. In Esa Oke 89.3% and in

Mansa 79.5% of families take all their children under the age of five to the Under Fives Clinic.

(2) Families where some children under the age of five in family attend the Under Fives Clinic.

It seems rather strange that a mother would decide to take only some of her children to the Under Fives Clinic. Some of the reasons given for a mother not taking her other children under the age of five to the clinic were as follows -

(a) The child not ill

(b) Child too small

(c) Child too old.

The above situation arose in 9% and 8% families respectively in Namitambo and Mansa. However, in Esa Oke only two families (0.7%) were in this situation.

(3) Families where all the children under the age of five do not attend the Under Fives Clinic. This amounted to 11.5% families in Ilesha, 10.0% in Esa Oke, and 12.5% in Mansa. However, in Namitambo 26% of families (more than twice as many as in other areas) did not take any of their children under the age of five to the Under Fives Clinic (See Table 46 for reason for clinic non attendance).

Table 69. This shows the division of the families

into three distinct groups, depending on the clinic attendance of the children under five in the family. In Tables 70 - 74, the three groups of families have been compared with each other in relation to the different variables.

TABLE 70.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE BY PERSON LIVING WITH CHILDREN BY AREA

PERSON/S LIVING IN DWELLING WITH CHILDREN	ALL AREAS		
	FAMILIES GROUP A	FAMILIES GROUP B	FAMILIES GROUP C
Mother only	34.1% (288)	40.2% (19)	46.2% (68)
Father only	6.0% (5)	0.0% (0)	1.4% (2)
Both	63.3% (533)	59.6% (28)	48.3% (71)
Neither parent	2.0% (17)	0.0% (0)	4.1% (6)
TOTAL	100.0% (843)	100.0% (47)	100.0% (147)

Group A. All children under the age of five in the family attend the under fives clinic

Group B. Some children under the age of five in family attend the under fives clinic

Group C. No child under the age of five in family attend under fives clinic

In all areas the tendency for all children under the age of five in family to attend the clinic is seen to be greater if the child lives with both parents rather than one. This pattern is seen also when each area is looked at separately. However, since the number of families where both parents live in dwelling far outnumber families where only one parent lives in dwelling, it is not possible to draw firm conclusions on this finding. For simplicity of presentation a single table is given for all four areas.

TABLE 71.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY KNOWLEDGE OF "PURPOSE OF IMMUNISATION" FOR ALL AREAS.

PURPOSE OF IMMUNISATION	ALL AREAS			
	FAMILIES GROUP A	FAMILIES GROUP B	FAMILIES GROUP C	ALL FAMILIES
For good health	32.6% (275)	19.2% (9)	10.8% (16)	28.9% (300)
To prevent disease	51.0% (430)	55.3% (26)	37.4% (55)	49.3% (511)
Other	15.8% (133)	25.5% (12)	51.8% (76)	21.3% (221)
Do not know	0.6% (5)	0.0% (0)	0.0% (0)	0.5% (5)
TOTAL	100.0% (843)	100.0% (47)	100.0% (147)	100.0% (1037)

Group A. All children under the age of five in the family attend the under fives clinic

Group B. Some children under the age of five in family attend the under fives clinic.

Group C. No children under the age of five in family attend under fives clinic.

This table attempts to elicit the knowledge acquired by families with regards to "purpose of immunisation".

Among families in Group A, 82.6% gave "for good health" and "to prevent disease" as answers. Both these answers were accepted as correct. However, among families in Group C 51.8% of answers given were classified as "other". These answers were interpreted as incorrect. The group "other" included answers such as "immunisations are given for diarrhoea, convulsions" etc.

The results of this table reveal that those mothers who brought some or all of their children to the Under Fives Clinic had a better knowledge regards reasons for immunising their children, than those mothers who did not bring any of their children to the Under Fives Clinic. Mothers in Group A were exposed to 'health education' at the Under Fives Clinic, while mothers in Group C were not. This could account for the better answers received from mothers in Group A.

For each of the four areas the answers were similar, and conformed to above pattern. Therefore to simplify presentation all areas have been taken together for Table 71

TABLE 72.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN, BY TYPE OF MILK SUITABLE FOR CHILDREN (UNDER THREE MONTHS OF AGE) BY AREA.

PART A. FAMILIES WHERE ALL CHILDREN UNDER THE AGE OF FIVE ATTEND THE UNDER FIVES CLINIC.

TYPE OF MILK	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	85.1% (235)	83.8% (223)	64.9% (85)	91.7% (156)	82.9% (699)
Artificial milk	6.9% (19)	10.2% (27)	30.5% (40)	2.4% (4)	10.7% (90)
Both	6.5% (18)	5.6% (15)	3.8% (5)	0.0% (0)	4.5% (38)
Do not know	1.5% (4)	0.4% (1)	0.8% (1)	5.9% (10)	1.9% (16)
TOTAL	100.0% (276)	100.0% (266)	100.0% (131)	100.0% (170)	100.0% (843)

PART B. FAMILIES WHERE ONLY SOME OF THE CHILDREN UNDER THE AGE OF FIVE ATTEND THE UNDER FIVES CLINIC

TYPE OF MILK	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	100.0% (11)	50.0% (1)	72.0% (13)	81.3% (13)	80.8% (38)
Artificial milk	0.0% (0)	50.0% (1)	28.0% (5)	6.2% (1)	14.9% (7)
Both	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Do not know	0.0% (0)	0.0% (0)	0.0% (0)	12.5% (2)	4.3% (2)
TOTAL	100.0% (11)	100.0% (2)	100.0% (18)	100.0% (16)	100.0% (47)

TABLE 72 (Continued)

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY TYPE OF MILK THOUGHT SUITABLE FOR CHILDREN UNDER THREE MONTHS OF AGE BY AREA.

PART C. FAMILIES WHERE NO CHILD UNDER THE AGE OF FIVE ATTENDS THE UNDER FIVES CLINIC.

TYPE OF MILK	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Breast milk	91.6% (33)	87.1% (27)	50.9% (27)	88.9% (24)	75.5% (111)
Artificial milk	2.8% (1)	9.7% (3)	41.5% (22)	3.7% (1)	18.4% (27)
Both	5.6% (2)	3.2% (1)	3.8% (2)	0.0% (0)	3.4% (5)
Do not know	0.0% (0)	0.0% (0)	3.8% (2)	7.4% (2)	2.7% (4)
TOTAL	100.0% (36)	100.0% (31)	100.0% (53)	100.0% (27)	100.0% (147)

Table 72.

In Part A for families where all children attend the Under Fives Clinic it is seen that between 64.9% and 91.7% families thought breast milk was more suitable for a child under the age of three months. However in Namitambo in this group 30.5% families replied that artificial milk was better suited for children under the age of three months.

In Part C among mothers who do not take their children to the Under Fives Clinic it is seen that 41.5% of families in Namitambo felt that artificial milk was more suitable for children under the age of three months.

The preferance of artificial milk for children under three months of age was only shown to any extent in Namitambo. In the other three areas in Part A, B and C of Table 72 it is seen that breast milk was accepted as more suitable for the children under the age of three months. It is possible that the staff at Namitambo clinic do not lay special emphasis on the importance of breast milk for the young child.

TABLE 73.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.

PART A. FAMILIES WHERE ALL CHILDREN UNDER THE AGE OF FIVE IN THE FAMILY ATTEND THE UNDER FIVES CLINIC.

NUMBER OF CHILDREN BORN TO MOTHER	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	16.0% (45)	13.0% (33)	24.0% (31)	16.0% (28)	16.0% (137)
2	18.0% (51)	15.0% (39)	20.0% (26)	15.0% (26)	17.0% (142)
3	20.0% (55)	13.0% (35)	9.0% (12)	15.0% (25)	15.0% (127)
4	18.0% (50)	15.0% (41)	6.0% (8)	12.0% (20)	14.0% (119)
5	13.0% (35)	16.0% (42)	13.0% (17)	11.0% (18)	13.0% (112)
6	9.0% (24)	12.0% (32)	5.0% (7)	11.0% (18)	10.0% (81)
7	2.0% (5)	7.0% (19)	10.0% (13)	6.0% (11)	6.0% (48)
8 and over	4.0% (11)	9.0% (25)	13.0% (17)	14.0% (24)	9.0% (77)
TOTAL	100.0% (276)	100.0% (266)	100.0% (131)	100.0% (170)	100.0% (843)

Table 73.

For families where all children under the age of five attend the clinic, the modal number of children born to mother for Ilesha was three, Esa Oke 5, Namitambo 1, and

Mansa one (Part A)

However, it is seen that 4.0%, 9.0%, 13.0% and 14.0% families in Ilesha, Esa Oke, Namitambo and Mansa respectively had eight or more children born to mother in the families where all children under the age of five attend the clinic.

In families where only some of the children under five attend the clinic (Part B) it is seen that the mode number of children born to mother is similar to Part A for Ilesha and Esa Oke, but for Namitambo this value increases to three and for Mansa to 2.

In families where none of the children under five attend the clinic, the modal. number of children born to mother was 1. (part C) when all areas are taken together

TABLE 73 (Continued)

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.

PART B. FAMILIES WHERE SOME OF THE CHILDREN UNDER THE AGE OF FIVE IN FAMILY ATTEND THE UNDER FIVES CLINIC.

NUMBER OF CHILDREN BORN TO MOTHER	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	8.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	2.0% (1)
2	28.0% (3)	0.0% (0)	17.0% (3)	38.0% (6)	25.0% (12)
3	28.0% (3)	0.0% (0)	27.0% (5)	7.0% (1)	19.0% (9)
4	18.0% (2)	50.0% (1)	17.0% (3)	12.0% (2)	17.0% (8)
5	0.0% (0)	50.0% (1)	11.0% (2)	12.0% (2)	11.0% (5)
6	0.0% (0)	0.0% (0)	11.0% (2)	7.0% (1)	6.0% (3)
7	18.0% (2)	0.0% (0)	0.0% (0)	12.0% (2)	9.0% (4)
8 and over	0.0% (0)	0.0% (0)	17.0% (3)	12.0% (2)	11.0% (5)
TOTAL	100.0% (11)	100.0% (2)	100.0% (18)	100.0% (16)	100.0% (47)

TABLE 73 (Continued)

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN BY NUMBER OF CHILDREN BORN TO MOTHER BY AREA.

PART C. FAMILIES WHERE NO CHILDREN UNDER THE AGE OF FIVE IN FAMILY ATTEND THE UNDER FIVES CLINIC.

NUMBER OF CHILDREN BORN TO MOTHER	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
1	19.0% (7)	19.0% (6)	30.0% (16)	19.0% (5)	23.0% (34)
2	28.0% (10)	16.5% (5)	11.0% (6)	22.0% (6)	19.0% (27)
3	8.0% (3)	13.0% (4)	4.0% (2)	11.0% (3)	8.0% (12)
4	22.0% (8)	19.0% (6)	15.0% (8)	11.0% (3)	17.0% (25)
5	17.0% (6)	6.5% (2)	15.0% (8)	14.0% (4)	14.0% (20)
6	3.0% (1)	13.0% (4)	8.0% (4)	11.0% (3)	8.0% (12)
7	3.0% (1)	6.5% (2)	8.0% (4)	4.0% (1)	5.0% (8)
8 and over	0.0% (0)	6.5% (2)	9.0% (5)	8.0% (2)	6.0% (9)
TOTAL	100.0% (36)	100.0% (31)	100.0% (53)	100.0% (27)	100.0% (147)

TABLE 74.

DISTRIBUTION OF FAMILIES BY UNDER FIVES CLINIC ATTENDANCE OF CHILDREN IN FAMILY BY ANTE NATAL CLINIC ATTENDANCE OF MOTHER FOR ALL AREAS.

ANTE NATAL CLINIC ATTENDANCE OF MOTHER	ALL AREAS		
	FAMILIES GROUP A	FAMILIES GROUP B	FAMILIES GROUP C
Yes	91% (770)	79% (37)	69% (102)
No	9% (73)	21% (10)	31% (45)
TOTAL	100% (843)	100% (47)	100% (147)

Table 74.

Group A. All children under the age of five in family attend the under fives clinic.
Group B. Some children under the age of five in family attend the under fives clinic.
Group C. No children under the age of five in family attend under five clinic.

This table looks at the relationship between the ante natal attendance of a mother during her pregnancy and the Under Fives Clinic attendance of her child. Is it more likely for a mother to take her children to the Under Fives Clinic if she herself makes use of the facilities at the ante natal clinic when she is pregnant? 91% of mothers who take all their children to the Under Fives Clinic (Group A) attend ante natal clinic when pregnant. However, only 69% of mothers in Group C, i.e. (those mothers that do not take any of their children to the Under Fives Clinic) attend ante natal clinic. 31% of families do not use the facilities at

Under Fives Clinic or ante natal clinic.

The relationship between Under Fives clinic attendance and ante natal clinic attendance, for each of the four study areas showed a pattern similar to above. Hence in order to simplify the presentation, a single table, combining all areas is given.

CHARACTERISTICS OF CHILDREN BY UNDER

FIVES CLINIC ATTENDANCE

TABLES 75 - 83.

CHARACTERISTICS OF CHILDREN BY UNDER FIVES CLINIC ATTENDANCE

TABLES 75 - 83.

TABLE 75.

DISTRIBUTION OF CHILDREN BY AGE IN YEARS BY CLINIC ATTENDANCE AND BY AREA.

AGE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
0 - under 1 year	25% (88)	31% (16)	22% (82)	26% (9)	34% (61)	35% (29)	36% (80)	18% (16)	28% (311)	27% (70)
1 - under 2 years	19% (71)	27% (14)	23% (84)	29% (10)	24% (43)	26% (21)	10% (21)	52% (47)	19% (219)	36% (92)
2 - under 3 years	19% (71)	19% (10)	18% (67)	21% (7)	18% (31)	22% (18)	24% (54)	12% (11)	20% (223)	18% (46)
3 - under 4 years	19% (71)	10% (5)	20% (72)	12% (4)	18% (31)	5% (4)	18% (40)	10% (9)	18% (214)	8% (22)
4 - under 5 years	18% (67)	13% (7)	17% (63)	12% (4)	6% (11)	12% (10)	12% (27)	8% (7)	15% (168)	11% (28)
TOTAL	100% (368)	100% (52)	100% (368)	100% (34)	100% (177)	100% (82)	100% (222)	100% (90)	100% (1135)	100% (258)

*Clinic Attender
** Clinic Non Attender

Table 75.

This table shows the relationship between age of children and clinic attendance. In Ilesha and Esa Oke, the clinic attenders are seen to be distributed between 17% and 25% for each age group, i.e. almost as many children in the older age group attending the clinic as in the younger ages.

However in Namitambo and Mansa, the pattern is different. In both these areas there is a higher proportion of clinic attenders in the younger age groups, i.e. 0 - under 1 year than in the older age group 4 - under 5 years. For example, in Namitambo 34% clinic attenders are in the 0 - under 1 year age group while only 6% of children in the 4 - under 5 year group attend the clinic.

Table 76.

The sex distribution of children in relations to clinic attendance is seen in Table 76. In Ilesha, Esa Oke and Namitambo more males are seen among clinic attenders. However, in Mansa the proportions are reversed, with more females in the group clinic attenders.

It must be noted, however, that in Esa Oke among those children who did not attend the clinic (non attenders) too there was a male preponderance. The numbers in the group are small and hence cannot be used as a reliable indicator of sex distribution among clinic non attenders for this area.

TABLE 76.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY SEX AND BY AREA

SEX	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Males	52.8% (200)	47.5% (26)	52.4% (193)	54.1% (20)	51.7% (92)	47.0% (39)	46.4% (122)	43.1% (22)	52.3% (637)	47.3% (107)
Females	47.2% (179)	52.8% (29)	47.6% (175)	45.9% (17)	48.3% (86)	53.0% (44)	53.6% (141)	56.9% (29)	47.7% (581)	52.7% (119)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1218)	100.0% (226)

*C.A. Clinic Attender
**N.A. Clinic Non Attender

TABLE 77.

DISTRIBUTION OF CHILDREN BY DISTANCE OF DWELLING FROM CLINIC BY UNDER FIVES CLINIC ATTENDANCE BY AREA.

DISTANCE FROM CLINIC	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
½ mile	95% (91)	5% (5)	92% (84)	8% (7)	51% (24)	49% (23)	79% (51)	19% (12)	81% (250)	19% (47)
1 mile	90% (88)	10% (10)	96% (67)	4% (3)	75% (40)	25% (13)	85% (45)	15% (8)	86% (240)	14% (34)
1½ miles	84% (80)	16% (15)	90% (76)	10% (8)	75% (42)	25% (14)	83% (48)	17% (10)	81% (246)	19% (47)
2 miles	90% (72)	10% (8)	86% (68)	14% (11)	67% (33)	33% (16)	87% (68)	13% (10)	81% (241)	19% (45)
2½ miles	74% (48)	26% (17)	90% (73)	10% (8)	70% (39)	30% (17)	82% (51)	18% (11)	75% (211)	25% (53)
TOTAL	87% (379)	13% (55)	91% (368)	9% (37)	68% (178)	32% (83)	84% (263)	16% (51)	81% (1188)	19% (226)

* Clinic Attender
** Clinic Non Attender

Table 77.

The distribution of children by distance from dwelling by clinic attendance is shown in Table 77.

In Ilesha the proportion of children who attend the clinic decreases with increasing distance, i.e. 95% of children living at a distance of ½ mile from clinic, are Under Fives Clinic attenders. Whereas only 74% of children living at a distance of 2½ miles from clinic attend it. However, in Esa oke, Namitambo and Mansa, the proportion of children who attend the clinic at each distance does not decrease with increasing distances of dwelling from clinic. For example in Mansa 79% of children living ½ mile from clinic, and 82% of children living 2½ miles from clinic are clinic attenders.

TABLE 78.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY PRESENCE OF UMBILICAL HERNIAE BY AREA

UMBILICAL HERNIAE	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders	Clinic Attenders	Clinic Non-Attenders
Present	24% (92)	29% (16)	26% (96)	24% (9)	7% (12)	5% (4)	5% (14)	4% (2)	18% (214)	14% (31)
Absent	76% (287)	71% (39)	74% (272)	76% (28)	93% (166)	95% (79)	95% (249)	96% (49)	82% (974)	86% (195)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188	100% (226)

Table 78.

As mentioned earlier, in many parts of Africa umbilical herniae in children are common. From Table 78, it is seen that in both clinic attenders and non attenders in Ilesha and Esa Oke umbilical herniae were seen in about 25% of children. There does not appear to be any relationship between presence of umbilical herniae and clinic attendance in any of the four areas of study.

Table 79.

The mother or guardian was asked if they thought their child was ill on the day of interview. No physical or other examinations were carried out to verify the answer received.

In Ilesha, Esa Oke and Mansa nearly 90% of mothers answered that the child was well at time of interview. However in Namitambo there were almost twice as many ill children on day of survey. During the month of March 1972 when the Namitambo survey was carried out there was an outbreak of conjunctivitis in that area. This seemed to affect not only children but also adults. In Namitambo the higher proportion of children who were reported as ill on the day of survey might have at least in part resulted from the conjunctivitis outbreak.

TABLE 79.

DISTRIBUTION OF CHILDREN UNDER FIVE BY CLINIC ATTENDANCE BY ILLNESS ON DAY OF SURVEY AND BY AREA

HEALTH OF CHILD ON DAY OF SURVEY	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Child ill	7% (28)	2% (1)	8% (31)	8% (3)	21% (38)	18% (15)	10% (26)	8% (4)	10% (123)	10% (23)
Child well	93% (351)	98% (54)	92% (337)	92% (34)	79% (140)	82% (68)	90% (237)	92% (47)	90% (1065)	90% (203)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

* Clinic Attender
** Clinic Non Attender

TABLE 80.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY NUMBER OF ATTACKS OF DIARRHOEA (IN THE THREE MONTHS PRIOR TO SURVEY) BY AREA.

NUMBER OF ATTACKS OF DIARRHOEA	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*.C.A.	**N.A.	*C.A.	**N.A.
0	81% (307)	94% (52)	86% (315)	97% (36)	58% (104)	76% (63)	55% (144)	69% (35)	73% (870)	82% (186)
1	6% (23)	2% (1)	7% (25)	0% (0)	33% (59)	16% (13)	41% (109)	27% (14)	18% (217)	12% (28)
2 and over	39% (49)	4% (2)	7% (28)	3% (1)	9% (15)	8% (7)	4% (10)	4% (2)	9% (102)	6% (12)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

Table 80.

The mothers were asked to recall the number of attacks of diarrhoea her child had suffered from in the three months preceding the survey. (For definition of diarrhoea as applicable in this study see page 165)

In each area the children who did not attend clinic had suffered less from diarrhoea than children who attend clinic. For example in Ilesha 81% clinic attenders and 94% non attenders had not had any attacks of diarrhoea in the three months preceding survey.

From Table 45 it is seen that the most popular reason for clinic attendance is treatment. If this is so, then one would expect that a child attended the clinic because it had diarrhoea, and therefore a lower proportion of children who were not having diarrhoea would not attend clinic.

TABLE 81.

DISTRIBUTION OF CHILDREN BY HISTORY OF WHOOPING COUGH AND/OR HISTORY OF MEASLES BY CLINIC ATTENDANCE BY AREA.

HISTORY OF DISEASE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Only measles Yes	29% (110)	13% (7)	36% (131)	24% (9)	37% (67)	24% (20)	22% (57)	14% (7)	31% (365)	19% (43)
Only whooping cough - yes	3% (13)	6% (3)	2% (7)	0% (0)	9% (16)	11% (9)	12% (33)	14% (7)	6% (69)	8% (19)
Both - Yes	3% (12)	4% (2)	5% (20)	3% (1)	10% (17)	7% (6)	6% (17)	41% (2)	5% (66)	5% (11)
Neither - Yes	62% (234)	75% (42)	56% (208)	73% (27)	43% (77)	58% (48)	57% (150)	60% (31)	56% (669)	66% (148)
Do not know	3% (10)	2% (1)	1% (2)	0% (0)	1% (1)	0% (0)	3% (6)	8% (4)	2% (19)	2% (5)
	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic attender
**Clinic non attender.

TABLE 81.

The distribution of children by history of whooping cough and/or measles by clinic attendance is shown in Table 81. It is noted that for each area, a large proportion of clinic non attenders have not suffered from either measles or whooping cough. For example 75%, 73%, 58% and 60% non attenders in Ilesha, Esa Oke, Namitambo and Manse have not suffered from measles or whooping cough.

Between 3 and 10% of all children had suffered from both whooping cough and measles (clinic attenders and non attenders) It is also interesting to note that for each area far more clinic attenders suffered from measles than clinic non attenders. Far less children in each area gave a history of having had whooping cough. This could have partly arisen due to the inability of the mothers to recognise this disease. However, among those children who gave a history of whooping cough a greater proportion in each area were clinic non attenders.

TABLE 82.

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY HOSPITAL ADMISSION, IF ANY, BY AREA.

ADMISSIONS (NUMBER OF OCCASIONS)	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
0	78.4% (297)	85.4% (47)	83.2% (306)	91.9% (34)	88.2% (157)	91.6% (76)	64.6% (170)	72.5% (37)	78.3% (930)	85.8% (194)
1	17.2% (65)	7.3% (4)	13.9% (51)	5.4% (2)	10.7% (19)	6.0% (5)	33.5% (88)	33.5% (12)	18.8% (223)	10.2% (23)
2	4.4% (17)	7.3% (4)	2.9% (11)	2.7% (1)	1.1% (2)	2.4% (2)	1.9% (5)	4.0% (2)	2.9% (35)	4.0% (9)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

* Clinic attender
** Clinic non attender

TABLE 82

This table shows the distribution of children by hospital admission by clinic attendance and by area. In order to study the association between hospital admissions and clinic attendance it is also important to separate the children into age groups.(An older child would have a greater chance of being hospitalised than a younger one, as the older child would have been exposed longer to diseases that might warrant hospitalization) The effect of age was looked at in relation to this table, and was found to be similar to that in table 61. Therefore for simplicity of presentation age as factor has been omitted from Table 82.

The percentage of clinic attenders in Mansa that have been admitted to hospital at least once is 35.4%. This is seen to be higher than in any of the other areas of study. The presence of a General hospital in Mansa, could partly have accounted for this. However in Ilesha, where there was also a General Hospital the percentage of clinic attenders admitted to hospital was 21.6%. So the presence of a General Hospital in the area does not seem to be the only guiding factor, for admission of clinic attenders to hospital.

TABLE 83(a)

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY B.C.G.VACCINATION BY AREA.

B.C.G. VACCINATION	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Given	83% (313)	16% (9)	73% (268)	3% (1)	37% (65)	1% (1)	56% (148)	2% (1)	67% (794)	5% (12)
Not given	17% (66)	84% (46)	27% (100)	97% (36)	63% (113)	99% (82)	44% (115)	98% (50)	33% (394)	95% (214)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

* C.A. Clinic Attender

** N.A. Clinic Non Attender

Table 83(a)

In all children the deltoid region of the upper arm was examined for scar following BCG vaccination. 83% and 73% clinic attenders in Ilesha and Esa Oke respectively had received BCG vaccination. Far smaller proportion of non attenders, i.e. 16% and 5% in Ilesha and Esa Oke had also been given BCG.

In Namitambo and Mansa the proportion of clinic attenders who had received BCG was smaller than the corresponding proportion for Ilesha and Esa Oke. However, in both Namitambo and Mansa the clinic attender who had received BCG far outnumbered the clinic non attenders who had been given BCG, i.e. 37% and 56% clinic attenders respectively in Namitambo and Mansa had been given BCG while 1% and 2% non attenders had in Namitambo and Mansa also had BCG

WEIGHTS OF CLINIC ATTENDERS AND NON ATTENDERS.

Figures 15 to 18 have been constructed by plotting the mean weights of children by age for children who attend the clinic and for those who do not.

In all four areas the mean weights by age of children who attend the clinic lie very close to the mean weights by age for the children who do not attend the clinic.

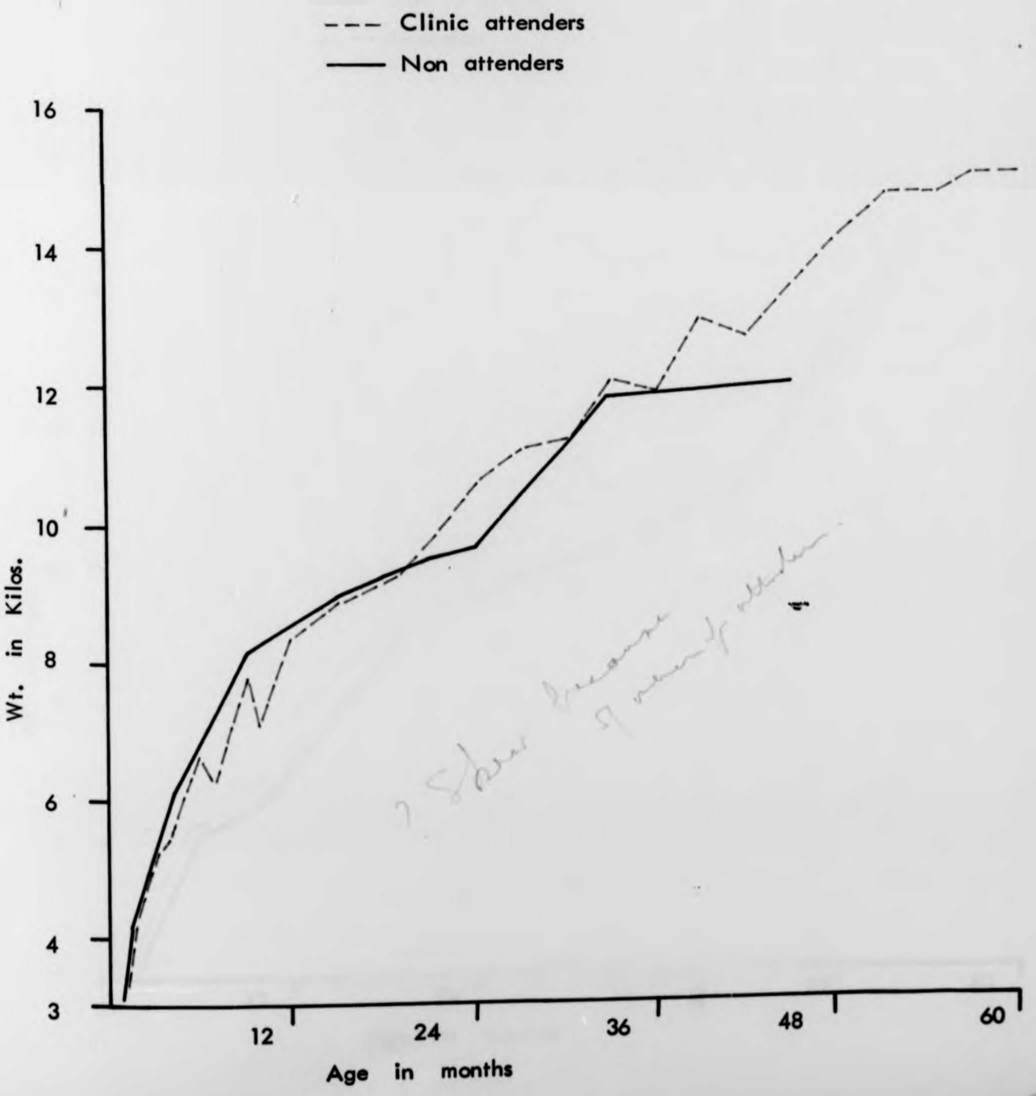
Of the 1414 children in the survey 1391 children were weighed. 23 children refused to be weighed. In Figures 15 to 18 the children have not been further subdivided by sex. This was intentional in order not to reduce further the numbers in each group.

The mean weights and number of children at each age are given in Tables 1–26 (Appendix 1)

DISTRIBUTION OF MEAN WT. (kg.) BY AGE (in months) BY CLINIC ATTENDERS AND NON ATTENDERS

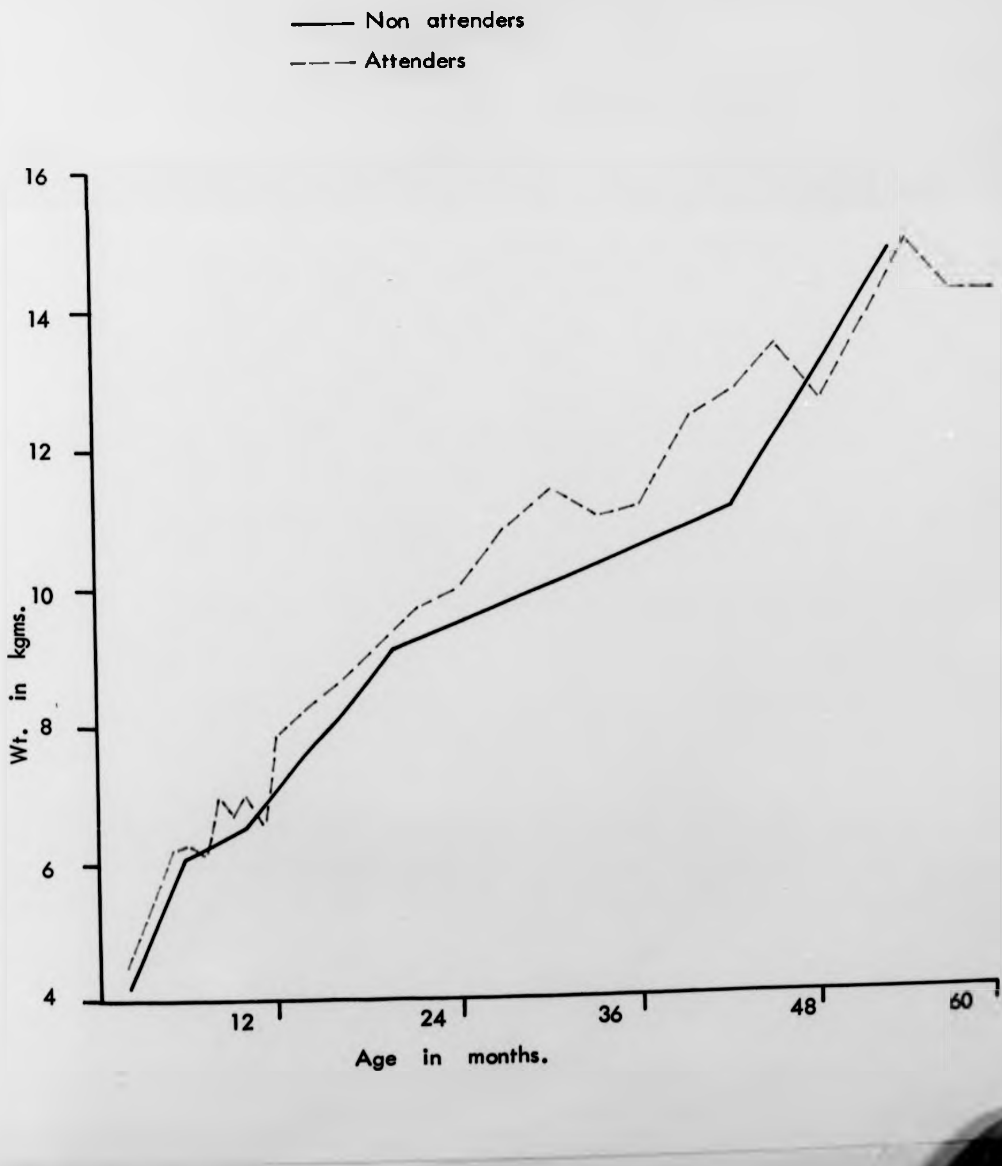
ILESHA.

FIG. 15.



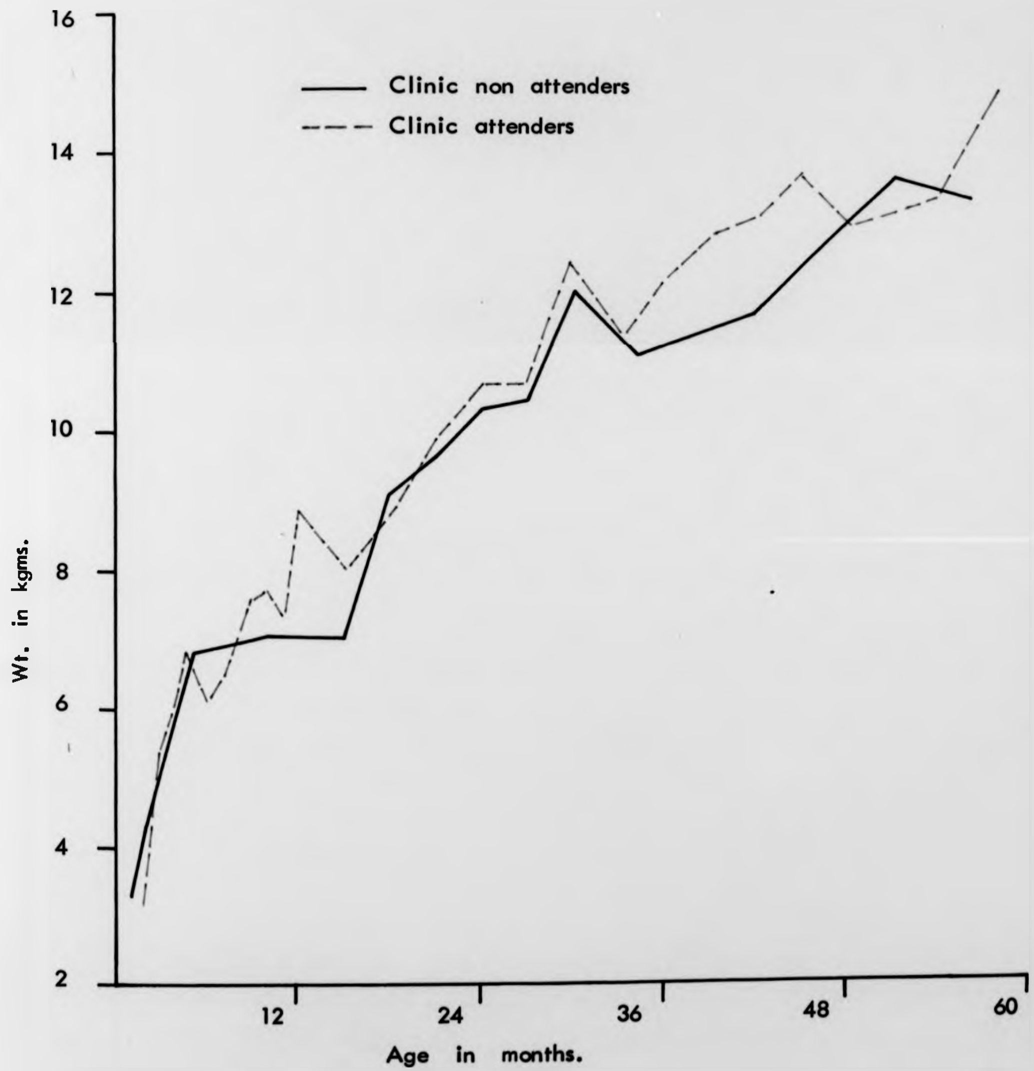
DISTRIBUTION OF MEAN WT. (Kg.) BY AGE (in months) FOR CLINIC ATTENDERS AND NON ATTENDERS.

ESA-OKE. FIG. 16.



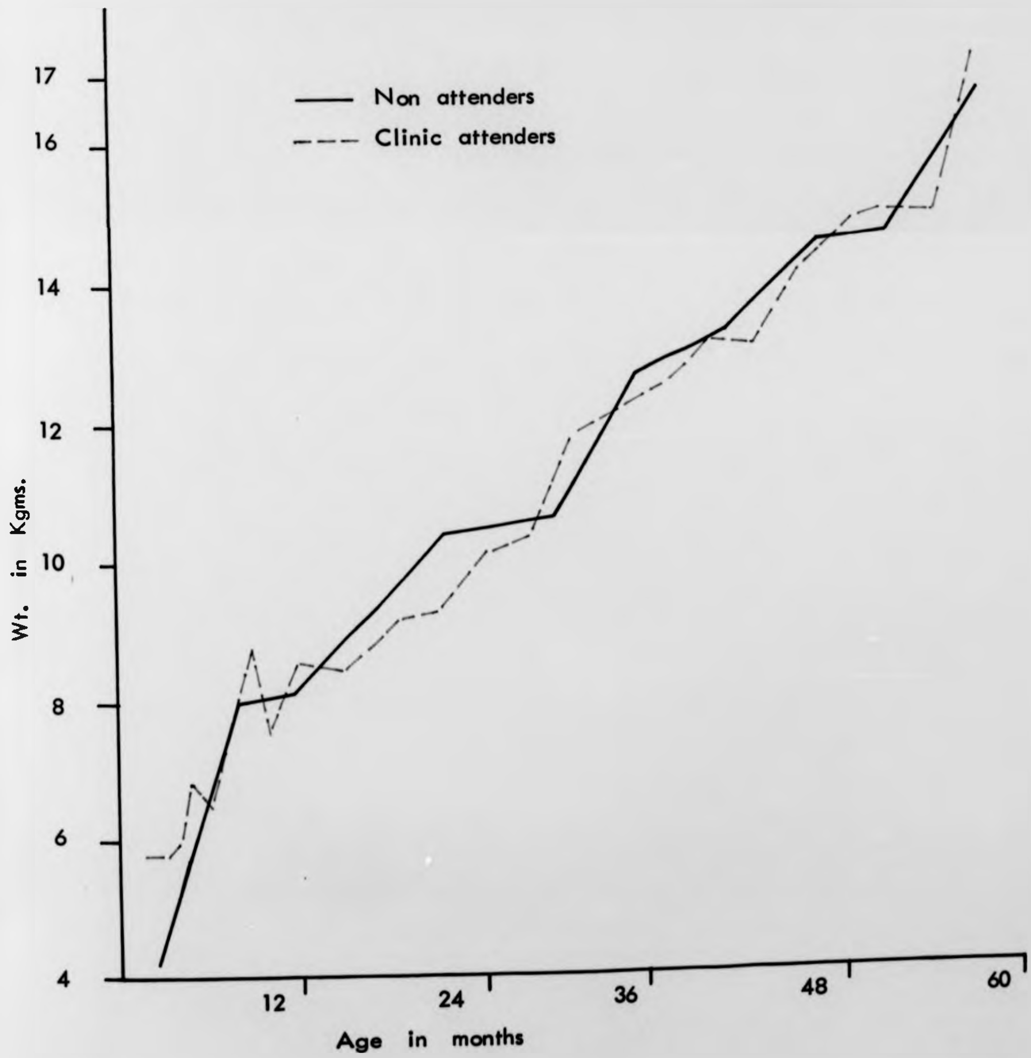
DISTRIBUTION OF MEAN WT. (Kg.) BY AGE (in months) FOR CLINIC ATTENDERS AND NON ATTENDERS.

NAMITAMBO. FIG. 17.



DISTRIBUTION OF MEAN WT. (kg.) BY AGE (in months) FOR CLINIC ATTENDERS AND NON ATTENDERS.

MANSA. FIG. 18.



STRUCTURE OF DWELLINGS AND CLINIC ATTENDANCE.

No evidence, by looking at structure of walls, floor and ventilation, place where cooking is done, latrine, ownership of dwelling and type of trade, was seen to elicit a difference between Clinic attenders and clinic non attenders (Appendix I Tables 3. to 18.) It might have been the case that none clinic attenders come from a broad socio-economic group which tended to live in less satisfactory dwellings, but this is shown not to be so. Therefore, from the present survey it is seen that there is no way of identifying clinic non attenders. (However a point of importance is that the clinic attenders far out numbered the clinic non attenders and therefore the number of clinic non attenders was of about one fifth of the number of clinic attenders.)

CHARACTERISTICS OF CLINIC ATTENDERS

(WHO HAD A ROAD TO HEALTH CARD ON

DAY OF SURVEY)

TABLE 83.(b)

DISTRIBUTION OF *CHILDREN BY DISTANCE TO CLINIC FROM DWELLING BY CLINIC VISITS (AS A PERCENTAGE OF IDEAL FOR AGE) BY AREA.

AREA	CLINIC VISITS AS % OF IDEAL FOR AGE	DISTANCE OF DWELLING FROM CLINIC				
		½ mile	1 mile	1½ miles	2 miles	2½ miles
Ilesha	76% and over	87.5% (77)	72.0% (56)	67.5% (52)	69.5% (48)	47.0% (17)
	51 - 25%	6.5% (6)	13.0% (10)	8.0% (6)	11.5% (8)	14.0% (5)
	26 - 50%	5.0% (4)	10.0% (8)	12.0% (9)	13.0% (9)	17.0% (6)
	1 - 25%	1.0% (1)	5.0% (4)	12.5% (10)	6.0% (4)	22.0% (8)
	TOTAL	100.0% (88)	100.0% (78)	100.0% (77)	100.0% (69)	100.0% (36)
Esa Oke	76% and over	88.0% (73)	92.0% (58)	88.0% (56)	82.0% (52)	89.0% (62)
	51 - 75%	6.0% (5)	4.0% (3)	3.0% (2)	9.0% (6)	4.0% (3)
	26 - 50%	0.0% (0)	2.0% (1)	6.0% (4)	3.0% (2)	4.0% (3)
	1 - 25%	6.0% (5)	2.0% (1)	3.0% (2)	6.0% (4)	3.0% (2)
	TOTAL	100.0% (83)	100.0% (63)	100.0% (64)	100.0% (64)	100.0% (70)
Namitambo	76% and over	62.5% (10)	37.0% (12)	40.0% (12)	8.0% (1)	25.0% (5)
	51 - 75%	6.0% (1)	3.0% (1)	3.0% (1)	15.0% (2)	15.0% (3)
	26 - 50%	13.0% (2)	41.0% (13)	10.0% (8)	31.0% (4)	25.0% (5)
	1 - 25%	18.5% (3)	19.0% (6)	47.0% (14)	46.0% (6)	35.0% (7)
	TOTAL	100.0% (16)	100.0% (32)	100.0% (30)	100.0% (13)	100.0% (20)
Mansa	76% and over	28.0% (11)	35.0% (9)	26.0% (8)	43.0% (18)	28.0% (14)
	51 - 75%	15.0% (6)	11.5% (3)	22.0% (7)	16.0% (7)	14.0% (7)
	26 - 50%	42.0% (16)	42.0% (11)	26.0% (8)	14.0% (6)	16.0% (8)
	1 - 25%	15.0% (6)	11.5% (3)	26.0% (8)	27.0% (11)	42.0% (21)
	TOTAL	100.0% (39)	100.0% (26)	100.0% (31)	100.0% (42)	100.0% (50)

* For children who attended the clinic and who had their 'Road to Health' card available on day of survey.

DISTRIBUTION OF MEDIAN NO. OF CLINIC VISITS PER CHILD BY AGE AND AREA.

FIG. 19.

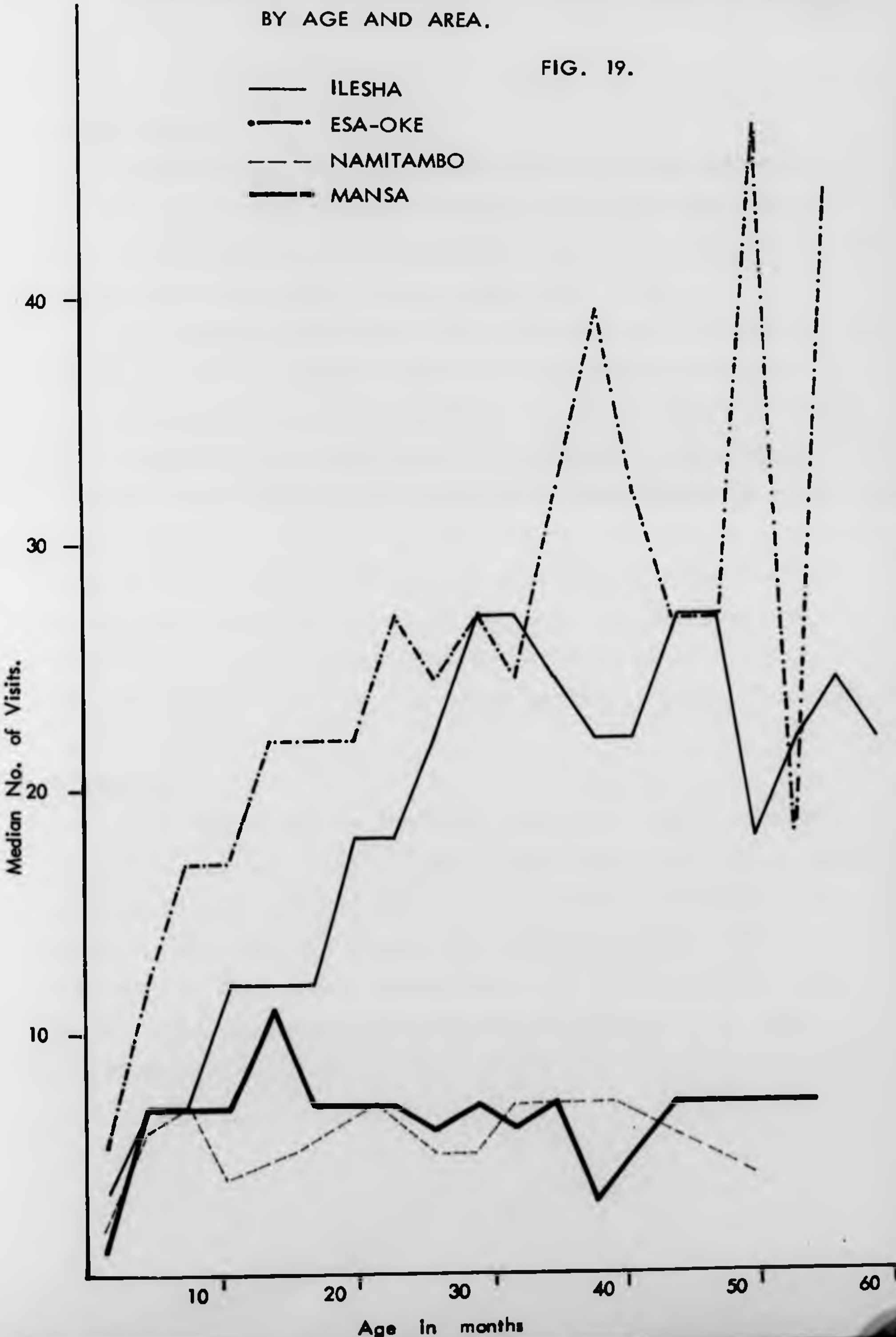


TABLE 83(b).

This table shows the relationship between distance of dwelling from clinic and frequency of clinic attendance. The 'clinic visits as an ideal for age' has been arrived at by the criteria mentioned on pages 176 - 178.

In Ilesha, as expected, the proportion of children who had made 76% and over of expected visits for age decreases with increasing distance from clinic, i.e. 87.5% children living at a distance of ½ mile and 47.0% children living at a distance of 2½ miles from clinic had made 76% or over of ideal number of visits for age. In Esa Oke at all distances from clinic between 82% and 92% children made 76% and over of the ideal number of visits for age. In Namitambo and Mansa only a small proportion of children at all distances had made 76% or more of the ideal number of visits for age.

FIGURE 19.

This figure shows the mean number of visits made per child at each age. As expected from Table 83(b) it is seen that in Ilesha and Esa Oke the mean number of visits per child at all ages is higher than those for Mansa and Namitambo. This graph applies to only those children who had a 'Road-to-Health' Card on day of survey, i.e. 992 children.

CHAPTER V

FINDINGS - CLINIC STUDY.

The author spent at least four sessions at each clinic acting as a passive observer. The information gathered from the clinic study is mainly of a descriptive nature.

ILESHA.

The concept of an Under Fives Clinic was first applied at Imesi, a village twenty five miles from Ilesha in the Western region of Nigeria, by Dr. David Morley and Miss Margaret Woodland in 1957. This concept was later extended to the Wesley Guild Hospital, a mission hospital in Ilesha. Prior to the commencement of an Under Fives Clinic in 1959 the Wesley Guild Hospital provided out patient clinics at which sick children and adults were seen and simple curative treatment provided.

The Under Fives Clinic in Ilesha is situated in the grounds of the Wesley Guild Hospital. The clinic's work constituted part of the Maternal and Child Health services provided by the hospital. Ante-natal and Family Planning clinics were also held twice weekly as part of the Maternal and Child Health services.

The Ilesha clinic is held on six days of the week (excluding Sundays and Public Holidays). It opens at 7.30 a.m. and usually stays open till 2 p.m. or until all the children have been seen. Any child brought in after the clinic has closed is seen at the Casualty Department of the hospital, if the condition warrants emergency treatment. At the Under Fives Clinic simple curative treatment is available for common ailments and in addition nutrition and health education talks and discussions are held daily. Immunisations are also carried out daily.

STAFF.

The staff employed at the Ilesha Under Fives Clinic is as follows:

Doctors	1	Part time.
Sisters	2	1 full time 1 part time
State Registered Nurse (S.R.N.)	1	Part time.
State Certified Midwife (S.C.M.) Grade I	6	
State Certified Midwife (S.C.M.) Grade II	2	
Student Nurses	2 - 4	(6 week attachment)
Pupil Midwives	1	(1 week attachment)
Welfare maids	2	
Welfare orderly	1	
Gardener	1	
Clerical	4	

Training and Duties of Staff.

Sister. 1 full time at the Under Fives Clinic; in overall charge of the clinic activities including administration. Works from 7 a.m. to 3 p.m. with one hour off for lunch. The other Sister visits the four out stations Under Fives Clinics three to four times a week. Spends the rest of the time at the Ilesha Under Fives Clinic.

A sister has both the S.R.N. and S.C.M. certificates. To be eligible to be appointed to the grade of a sister she should have had at least five years experience after qualifying as a S.R.N., or S.C.M. She should also have undergone the Health Visitor's training which takes fifteen months. A sister at the Ilesha Under Fives Clinic was paid £832/£942 per annum.

Staff Nurse. 1 staff nurse was attached to the Under Fives Clinic. She, however, spent three to four days each week visiting the out station clinics. The rest of the time she worked at the Ilesha clinic mainly attending to the Infants, i.e. under one year old.

In order to qualify as a State Registered Nurse, she should have completed her secondary school education with passes in English and Mathematics. She then spends three and a half years at the nursing school prior to being awarded a S.R.N. certificate. (As an option she could do one year of midwifery as well.) A state registered nurse at Wesley Guild Hospital was paid £ 740/£832

Grade I midwife. 6 Grade I midwives were attached to the clinic. They worked from 7 a.m. to 2.30 p.m. with a thirty minute break. 6 of them worked in the examination and consulting room and one worked in the nutrition rehabilitation room, i.e. dealing with malnourished children and educating their mothers. A grade I midwife was paid £543/£671

Grade II Midwife. A grade II midwife was attached to the clinic. She worked in the immunisation room.

The Student Nurses and the pupil midwives helped in rotation the other staff at the clinic in attending to the children and also helping in the immunisation and nutrition rehabilitation rooms.

The Doctor was in attendance from 11.30 a.m. to 2 p.m. for consultations. Approximately 10% of cases were referred to her. The Doctor was also in charge of teaching the staff and in supervising clinic activities.

Welfare maids and orderly carried out routine cleaning jobs. They had elementary schooling only. Two worked from 7 a.m. to 12 noon and two from 3 p.m. to 5 p.m.

Clerical staff. They are responsible for registration of the children, and for weighing and weight recording. They also help to maintain a smooth flow of patients through the clinic. They have a secondary school education. They work in shifts. Two work from 7 a.m. to 11 a.m., two from 7 a.m. to 1 p.m. and three from 1 p.m. to 3 p.m. One clerical worker does a further period of duty from 3 p.m. to 5 p.m. to attend to the records of the day.

TABLE 84

IMMUNISATIONS GIVEN AT ILESHA UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971

MONTH	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January	483	347	223	645	191	155	52	24	339
February	445	310	210	535	301	452	101	30	249
March	316	225		595	242	390	110		373
April	608	257	23	644	484	152	33		459
May	786	424	352	636	375			1	468
June	897	667	508	685	369	4	65	33	597
July	767	692	535	659	826	67	74	54	430
August	841	695	619	751	629	739	187	88	643
September	724	589	570	717	483	415	188	86	534
October	661	515	541	560	371	267	191	149	398
November	657	567	458	692	365	187	154	121	362
December	513	491	450	579	384	368	193	145	383
Total doses	7,698	5,779	4,489	7,698	5,020	3,196	1,348	731	5,235
Mean number of doses/month	642	482	374	642	418	266	112	61	436

TABLE 85.

ATTENDANCE AT THE ILESHA UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971.

Month	Re-attenders		New attenders		Total Attendances	Referred to Doctor	
	Males	Females	Males	Females		Numbers	%
January 1971	6,551	6,060	394	440	13,445	1,645	12.2%
February 1971	6,150	5,843	324	403	12,720	1,564	12.3%
March 1971	6,586	6,021	408	425	13,440	1,458	10.8%
April 1971	6,189	5,901	375	391	12,856	1,326	10.3%
May 1971	5,541	5,155	369	347	11,412	1,176	10.3%
June 1971	5,718	5,259	337	324	11,638	1,292	11.1%
July 1971	6,613	6,167	422	373	13,575	1,232	9.1%
August 1971	7,096	6,536	392	381	14,405	1,211	8.4%
September 1971	5,867	5,520	347	341	12,075	1,285	10.6%
October 1971	5,861	5,530	386	385	12,162	1,397	11.5%
November 1971	5,928	5,721	403	394	12,446	1,326	10.6%
December 1971	5,381	4,905	362	349	10,997	1,279	11.6%
Total attendances	73,481	68,618	4,519	4,553	151,171	16,191	10.7%

ESA-OKE.

In Esa Oke the Under Fives Clinic was started in 1969. Prior to this the only western medicine available was at the local dispensary in the village which provided curative treatment only. Attached to the Esa Oke Under Fives Clinic is a delivery room and four lying-in beds for post partum mothers.

At Esa Oke the clinic is open daily from 8 a.m. till 2 p.m. or until all the children are seen. Due to the lack of refrigeration facilities at the clinic immunisations are carried out once a week when a visiting nurse from the Wesley Guild Hospital Under Fives Clinic brings the vaccine to Esa oke. No electricity was available at Esa Oke. However a paraffin refrigerator would have been a possibility. In spite of the immunisations being available only once a week the percentage of children immunised was high. This could mainly be attributed to the enthusiasm of the clinic staff. The midwife in charge of the clinic was in fact the wife of the local village chief. The chief was a man of great intellect and had a very strong influence on his people. The success of the Esa Oke clinic is mainly due to the encouragement given by the chief to the staff. Another factor which contributed to the success of the clinic was that the clinic served a localised area only.

Staff at Esa Oke Under Fives Clinic.

Grade 1 Midwife	1
Grade II Midwife	2
Welfare maid	1

Cleaner	1

Visits from a doctor once a week

Visits from Public Health Sister once a month

Visits from Staff Nurse once a week

TABLE 86.

ATTENDANCES AT THE ESA OKE UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971.

Month	Re attenders		New attenders		Total
	Males	Females	Males	Females	Attendances
January	834	769	15	9	1,627
February	788	894	9	2	1,693
March	876	1,160	11	12	2,059
April	838	1,040	14	11	1,903
May	924	1,220	12	12	2,168
June	913	1,070	9	12	2,004
July	845	1,083	14	10	1,952
August	803	987	18	11	1,819
September	638	812	15	10	1,475
October	543	637	23	9	1,212
November	602	740	9	11	1,362
December	569	770	10	7	1,356
Total attendences	9,173	11,182	159	116	20,630

TABLE 87.

IMMUNISATIONS GIVEN AT THE ESA OKE UNDER FIVES CLINIC - JANUARY 1971 - DECEMBER 1971

MONTH	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January	22	26	16	13	8				
February	25	16	16	10	3				
March	21	21	17	9	-				45
April	19	29	19	36	9				17
May	29	11	20	17	1				9
June	17	25	14	17	15				3
July	12	17	13	14	11				-
August	15	12	11	22	8	6			
September	34	14	26	24	3	83			29
October	26	23	8	26		32	69		22
November	24	13	20	8	2	33	31	51	21
December	26	27	28	7	20	16	30	17	19
Total doses	270	234	208	203	80	170	130	68	165
mean/doses month.	22.5	19.5	17.3	16.9	6.6	14.1	10.8	5.6	13.7

TABLE 88.

FINANCES OF THE ESA OKE CLINIC - APRIL 1970 - MARCH 1971

INCOME

MONTH	FEES FROM NEW PATIENTS AT FIVE SHILLINGS/ PATIENT	VACCINES	TOTAL
April 1970	31 x 5 £7 15.0.	£3 17. 0.	£11 12. 0.
May 1970	37 x 5 £9 5.0.	£2 14. 0.	£11 19. 0.
June 1970	20 x 5 £5 0.0.	£3 0. 0.	£8 0. 0.
July 1970	21 x 5 £5 5.0.	£3 9. 0.	£8 14. 0.
August 1970	24 x 5 £6 0.0.	£2 15. 0.	£8 15. 0.
September 1970	27 x 5 £6 15.0.	£2 12. 0.	£9 7. 0.
October 1970	25 x 5 £6 5.0.	£1 19. 0.	£8 4. 0.
November 1970	26 x 5 £6 10.0.	£2 7. 0.	£8 17. 0.
December 1970	22 x 5 £5 10.0.	£2 1. 0.	£7 11. 0.
January 1971	24 x 5 £6 0.0.	£3 4. 0.	£9 4. 0.
February 1971	11 x 5 £2 15.0.	£2 17. 0.	£5 12. 0.
March 1971	23 x 4 £5 15.0.	£2 19. 0.	£8 14. 0.
Total income from Under Fives Clinic patients			£106 9. 0.
Fees from adults and children over 5			£644 8. 6.
Total fees Under Fives and adults			£750 17. 6.

TABLE 89

FINANCES ESA OKE CLINIC - APRIL 1970 - MARCH 1971.

EXPENSES

Salaries	£650	0.	0.
Drugs and dressings	£382	18.	3.
Sundry expenses (cleaning etc.)	£32	3.	6.
Transport (Staff nurse and sister's visits	£26	12.	0.
Total expenses	£1,091	13.	9.
40% of expenses paid by Wesley Guild Hospital as a grant, i.e.	£436.	7.	0.
Credit, i.e. £750 17. 6. (Table 88) + £436 7. 0. - £1,091 13. 9.	£95	10	9.

Cost/patient visit 8.93d = 3.7p.

NAMITAMBO.

Until 1968 the number of health centres providing children's clinics in Malawi was minimal. Only seventeen government clinics were operating in the whole of the country, which together with the mission clinics saw approximately 0.5% of the children under the age of five. Cole King (1968)

COLE KING (1968) The introduction of Child Health services was therefore accorded priority in developing the personal preventive health services of Malawi. As a trial demonstration project in 1967, an existing dispensary was selected where an Under Fives Clinic could be started, staff trained and reorientated and methods developed, before introducing clinics on a wide scale. Namitambo had a typical rural dispensary with an adjacent maternity unit, and was chosen for the trial demonstration project.

At the time of the present study (March - April 1972) an Under Fives Clinic was held at the Namitambo centre once a week. However, children attending on the other days were seen in the general out patients clinic. Immunisations were carried out once weekly. In addition to the above weekly Under Fives Clinic at the Namitambo Health centre, mobile Under Fives Clinics were held at four sub centres (distances of one to three miles from the Namitambo clinic). These clinics were held once a month, for three hours.

The Namitambo Under Fives Clinic was administered directly by Central Government, i.e. the Ministry of Health. Malawi at present has 362 Under Fives Clinics. (FIGURE 8).

Drugs and vaccines for the Namitambo Under Fives Clinic are sent directly from the Ministry of Health. (The Under Fives Clinic in Malawi receive their supplies via the District Hospital). The smallpox and triple vaccines come from UNICEF but frequent shortages occur. No charge is made to the patients for the services rendered at the Under Fives Clinic. Due to the central administration of the Namitambo Under Fives Clinic it was not possible to obtain the costing of this clinic.

Staff at the Namitambo Under Fives Clinic.

Midwives	2
Community Nurse	1
Medical Assistant	1

TABLE 90.

ATTENDANCES AT THE NAMITAMBO UNDER FIVES CLINIC - JANUARY 1971 - OCTOBER 1971.

MONTH	NEW ATTENDERS	RE ATTENDERS	TOTAL ATTENDANCES
January	52	181	133
February	123	219	342
March	112	265	377
April			
May	49	64	113
June	73	147	220
July	67	134	201
August	36	112	148
September	45	136	181
October	94	268	362
Total attendances	651	1,534	2,077

TABLE 90.

ATTENDANCES AT THE NAMITAMBO UNDER FIVES CLINIC - JANUARY 1971 - OCTOBER 1971.

MONTH	NEW ATTENDERS	RE ATTENDERS	TOTAL ATTENDANCES
January	52	181	133
February	123	219	342
March	112	265	377
April			
May	49	64	113
June	73	147	220
July	67	134	201
August	36	112	148
September	45	136	181
October	94	268	362
Total attendances	651	1,534	2,077

TABLE 91.

IMMUNISATIONS GIVEN AT THE NAMITAMBO UNDER FIVES CLINIC - JANUARY 1971 - JANUARY 1972.

MONTH	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January	40	28	20	56	201	41	36	29	21
February	70	46	28		210	70	48	29	18
March	65	52	34	51	58	70	60	44	46
April									
May	63	39	32	46	59	79	64	52	14
June	53	40	26	78	43	65	44	29	20
July	65	44	24	61	46	77	59	30	4
August	46	30	20	18	52	65	53	40	4
September	36	24	16	53	26	63	32	21	
October	31	27	16	83	25	44	30	22	
November									
December									
January 1972	41	24	17	46	34	68	46	38	28
Total doses	469	330	216	446	720	574	426	296	127
Doses/month	47	37	24	50	80	64	47	33	14

<u>Cost of running Under Fives Clinics</u> (Malawi)

In Malawi it is difficult to separate the cost of the Under Fives Clinic from the general out patient clinics as there was no separate budget for this programme and separate figures are not available for the Namitambo clinic. However, COLE KING (1971) made an estimate of the recurrent costs of the 124 Under Fives Clinic services in Malawi for the year June 1969 - May 1970 as follows:

Staff costs @ £65 per clinic for 124 clinics (assuming one-tenth of three medical auxillaries' time spent on each Under Five clinic)	£7,060
Drugs cost @ £100 per 6,000 attendances	5,298
Immunisations (excluding DPT and Smallpox, which were supplied free from UNICEF)	996
Costs of graphs and plastic bags @ 2d. per child	731
Total	£14,085

Thus the estimated cost per attendance = 1/2d. = 6p

Estimated cost per child per year 3/6d. = 17½p.

She points out that the majority of children seen would have probably attended the general out patients clinic if they had not attended the Under Fives Clinic. The cost of attendance would be the same for the out patients clinic and the Under Fives Clinic, with the exception of the vaccines. Therefore she emphasises that the money spent on the Under Fives Clinics would if the clinics were not available, have been spent on general out patient clinics which would have had to cope with the extra work load of providing medical care for children.

ZAMBIA.

FAO Short term Food and Nutrition Survey Team in 1966 recommended to the Government of Zambia that a Zambian National Food and Nutrition Commission be established to implement the policy of the cabinet "to promote good nutrition and reduce the incidents of malnutrition" LUBBOCK AND CLAGUE (1967). The National Food and Nutrition Commission was organised in 1967 by Act 41 of the National Assembly, and received Presidential assent. WOLGEMUTH (1972). The Commission works closely with the Ministry of Health and particularly with the Maternal and Child Health Specialist. A pilot pre-school protection area in the Lusaka rural district was next set up and later extended to the Central Kafue area. These were the first attempts toward the start of Under Fives Clinics in the Zambian context WOLGEMUTH (1972). The growth of the clinics was further aided by the policy of the Ministry of Health to have an Under Fives Clinic in each of its government medical units. Valuable assistance has come from the contribution of the field staff represented from volunteer services, especially those from the Netherlands nurses who established clinics in North western Province and Luapula Province.

Dr. C. A. M. Boelens was appointed as the first Medical Officer for Maternal and Child Health services in the Ministry of Health in Zambia in January 1967 and was asked to organise these services for the whole of Zambia. Prior to this the medical services consisted of provision of simple curative treatment for the commonly occurring ailments, apart from the work carried out by the environmental Hygiene Department. In March 1967 a pilot project for Under Fives Clinics was started in Luapula Province as part of the outpatient services provided by the Mansa General Hospital. A daily Under Fives Clinic at Mansa Hospital was started in June 1970. GREENACRE (1970). Dr. Francis Shattock in 1969 took over as specialist in Maternal and Child Health in Zambia. Under his leadership the Under Fives Clinics net work spread rapidly into every province. Today Zambia has over one thousand Under Fives Clinics

At the time of the present survey in April 1972, the Mansa Under Fives Clinics were held daily from 8 a.m. till 1 p.m. from Monday to Friday and a small clinic on Saturday mornings lasting about two hours. Immunisations were carried out daily. Seven sub centres at Senama, Kabuta, Chibalashi, Buntungwe, Kabunda, Dairy and Katangwe) also hold Under Fives Clinics, and their clinic session times and their distances from the Mansa clinic are given below.

Senama	2 miles from Mansa	6 sessions per month	½ day sessions
Kabuta	3 miles from Mansa	1 session per week	½ day sessions
Chibala-shi	4 miles from Mansa	1 session per week	½ day sessions
Kabunda	9 miles from Mansa	1 session per week	½ day sessions
Dairy	9 miles from Mansa	1 session per week	½ day sessions
Buntungwe	2 miles from Mansa	1 session per week	½ day sessions
Katangwe	15 miles from Mansa	1 session per week	½ day sessions

The children seen in the Mansa field survey mainly visited the Under Fives Clinic at the Mansa hospital but may have also very occasionally made a visit to one of the sub centre clinics in the area

Staff at the Mansa Under Fives Clinic.

S.R.N.	1
Community Nurse	1
Nutrition demonstrator	1
Female dressers	3
Helper	1

TABLE 92.

ATTENDANCES AT THE MANSA UNDER FIVES CLINIC - JANUARY 1971 - NOVEMBER 1971.

Month	New attenders	Re attenders	Total
January 1971	194	341	535
February 1971	169	581	750
March 1971	218	927	1,145
April 1971	165	839	1,004
May 1971	* 7	671	678
June 1971	119	774	893
July 1971	86	613	699
August 1971	72	539	611
September 1971	214	1,027	1,241
October 1971	503	1,633	2,136
November 1971	441	1,950	2,391
Total attendances	2,188	9,895	12,083

* The number of new attenders at the clinic in May 71 is far less than during any other month. It is possible that there might have occured a clerical error in copying down the numbers from the register.

TABLE 93.

IMMUNISATIONS GIVEN AT THE MANSA UNDER FIVES CLINIC - FEBRUARY 1971 - NOVEMBER 1971.

Month	TRIPLE 1st dose	TRIPLE 2nd dose	TRIPLE 3rd dose	B.C.G.	Smallpox	POLIO 1st dose	POLIO 2nd dose	POLIO 3rd dose	Measles
January 1971	119	89	57	119	84	114	79	67	96
February 1971	147	61	77	198	111	147	57	82	76
March 1971	113	126	56	242	180	207	104	57	*O/S
April 1971	185	128	86	185	153	171	119	84	*O/S
May 1971	145	112	70	103	67	147	114	78	*O/S
June 1971	123	99	52	93	84	127	91	62	291
July 1971	78	76	102	69	69	77	71	98	183
August 1971	95	86	82	90	85	84	82	67	85
September 1971	133	92	114	129	104	128	87	82	171
October 1971	174	110	109	211	135	163	88	64	156
November 1971	135	60	55	162	185	134	72	32	126
Total doses	1,447	1,035	860	1,601	1,247	1,499	964	773	1,184
Mean doses/ month	131.5	94.4	78.1	145.5	113.3	136.3	87.6	70.2	107.6

*O/S Out of stock

TABLE 94.

COMPARISON BETWEEN CLINICS.

A. ATTENDANCES

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Attendances/month (1971)				
First attenders	756	23	72	199
Re attendances	11,841	1,696	170	900
Total/month	12,597	1,719	242	1,099
Clinic sessions/ month	24	24	4	24
Attendances/clinic session	525	72	61	46
Re attendance Indicator	15.6	73	2.3	4.5
Total annual re attendances/ Total annual new attenders				

TABLE 94.

COMPARISON BETWEEN CLINICS.

A. ATTENDANCES

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Attendances/month (1971)				
First attenders	756	23	72	199
Re attendances	11,841	1,696	170	900
Total/month	12,597	1,719	242	1,099
Clinic sessions/ month	24	24	4	24
Attendances/clinic session	525	72	61	46
Re attendance Indicator	15.6	73	2.3	4.5
Total annual re attendances/ Total annual new attenders				

TABLE 95.

COMPARISON BETWEEN CLINICS

B. IMMUNISATIONS

Immunisations/ month (1971)	ILESHA (NIGERIA)		ESA OKE (NIGERIA		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)	
	Doses	*I.R.	Doses	*I.R.	Doses	*I.R.	Doses	*I.R.
BCG	642	20	17	101	50	5	146	8
Smallpox	418	30	7	246	180	3	113	10
Triple vaccine								
1st dose	642	20	23	75	52	5	132	8
2nd dose	482	26	20	86	37	7	94	12
3rd dose	374	34	17	101	24	10	78	14
Polio vaccine								
1st dose	266	47	14	123	64	4	136	8
2nd dose	112	112	11	156	47	5	87	13
3rd dose	61	207	6	287	33	7	70	16
Measles	436	29	14	123	14	17	148	7
Total vaccine doses	3,433		109		401		1,004	
Immunisation rate $\frac{\text{attendances/month}}{\text{immunisation/month}}$	3.66		15.77		0.6		1.09	

*I.R. is the ratio of the total number of attendances to the total number of vaccinations given per month. For example for Ilesha for every 20 children attending the clinic 1 child is given BCG vaccination.

TABLE 96.

COMPARISON BETWEEN CLINICS

C. STAFF

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Sisters	2			
State Registered Nurses	1			
State certified Midwives	8	2	2	
Medical assistants			1	
Student nurses/ and or student midwives/and or dressers/and or Nutrition demonstraters	3			1
TOTAL STAFF	14	2	3	3
Patients/staff member/session	38	36	30	15

CHAPTER VI. DISCUSSION.

The systems of health care encapsulated by the title 'Under Fives Clinic' attempts, with limited resources of personnel and money, to meet the medical need of young children in the developing countries. It aims to reduce the overall mortality and morbidity of young children, to reduce the incidents of malnutrition, and to change the attitudes and child rearing practises, by the provision of some basic medical care and also health education. How far have these goals been achieved?

A World Health Organisation Study Group on the 'Measurement of levels of health' WHO (1957) states "No more fundamental problem confronts the health administrator than the measurement of the levels of health in the community; and nothing could be more valuable than to have at his command one or more measuring rods to help him in his task and also in assessing his specific problems relating to the health of the people, in designing his plans to deal with these, in guiding his administration and in evaluating his schemes". However in those areas of the world where Under Fives Clinics exist reliable data on such basic health indices as mortality and morbidity are not available. As a result of this lack of essential vital statistical data it has not been possible to make any routine assessment on the health of the community after the introduction of an Under Fives Clinic. The various methods of assessing the health of a population will be first considered in this discussion.

Assessing changes in the health of a population.

In the absence of National Vital Statistics for assessing the changes in the morbidity and mortality in the child population, specific studies can be designed to assess such changes in the health status of the community. As discussed earlier they could take one or two forms. (1) Longitudinal studies and (2) Point prevalence studies.

Longitudinal study.

In this type of study the baseline data on the health of the population would be collected. Following on this an Under Fives Clinic would be set up and the health of the population followed for an appropriate period of time. A comparison could then be made of the health of the population before and after the introduction of the Under Fives Clinic. This is basically an unsatisfactory type of approach because the changes in the health of the population over this period of time could result from other factors which may not be apparent to the investigator, which may erroneously be ascribed to the effects of the Under Fives Clinic. Such longitudinal studies are in their nature expensive in both staff and money and is not a very certain method for assessing the effects of Under Fives Clinics particularly where a quick answer is required.

Controlled Trials.

This is a variation on the longitudinal study described above. Here two closely matched populations would be followed over an appropriate period of time. One population would have an Under Fives Clinic set up and the other would be left with its usual health and other services. After a period of time the health of the two communities would be compared. This type of design gets over the problems of comparing the health before and after the introduction of an Under Fives Clinic, but assumes that the two populations are similar in all important respects, except that one has an Under Fives Clinic and the other has not.

The introduction of a health service which is assumed to be beneficial to the population to only one of these areas could be politically a difficult task. Also in reality it is difficult to chose two areas that initially are comparable. Thus this type of approach may also present difficulties when it comes to interpret the findings. In addition it has all the problems of longitudinal studies mentioned above.

What we would be seeking in the way of techniques to evaluate Under Fives Clinics would be those that are simple, cheap and rapid, that would serve to give us some possibly fairly crude measurement of such clinics, on the health of communities.

Point prevalence studies.

This type of study does seem to offer the possibility of being able to assess the effects of Under Fives Clinics. Point Prevalence studies are usually unsatisfactory for assessing the levels of acute diseases in the community. This might well be unreliable, in for example indicating whether acute gastro-enteritis or acute respiratory disease has become more or less common following the introduction of Under Fives Clinics. However Point Prevalence studies undertaken in populations served by Under Fives Clinics, and in others where these clinics had not been set up, could provide some measure of their activities and effectiveness.

A further approach to the study of Under Fives Clinics which was undertaken in the present study was to try and ask questions not so much in populations with and without Under Fives Clinics, but to see if there was any evidence in the population which had access to an Under Fives Clinic, that those who made use of these services appeared to have any better health than those who did not. With the use of this approach it was attempted to test a methodology for assessing Under Fives Clinics.

In developing countries there does not seem to be sufficient realisation that health services need to be evaluated. This implies that money from the general health budget may need to be set aside for research into the health services. However, if the community can be involved in studying the delivery of health care, it is possible that the study of the effectiveness of the delivery system may be done economically and not need much from central funds.

Evaluation of medical care.

The evaluation of Under Fives Clinics have so far been carried out on a very limited scale. Prior to the present study the evaluation studies reported in the literature were very few. The most relevant studies were described in chapter I and will be briefly discussed here.

WEBB (1969) attempted to evaluate the Ilesha Under Fives Clinic (which is the same Under Fives Clinic referred to in the present study). She visited dwellings at varying distances from the clinic, and attempted to study the children under the age of five in these dwellings. However, her findings have not been published and thus it is not possible to arrive at any conclusions on the validity of this method of evaluation. The methodology used in the present study was a modification of that used by Webb.

In the other study described by CUNNINGHAM (1969) a village having an established Under Fives Clinic (Imesi-Ile) was compared with a village Oke-Imesi which had no Under Fives Clinic. The survey was carried out in 1966/67 and at this time it was said that the villages were similar in the more important criteria like population structure and socio-economic status. The control village of Oke Imesi was if anything the wealthier. The author concluded that the only appreciable differences between these villages lay in their infant mortality rates and the 1 - 4 year mortality rates and in the weights of children after the first six months of life. The above mentioned mortality rates were reduced in Imesi-Ile which had an Under Fives Clinic, and also the weights of the children after the first six months of life were better in the children in Imesi. (Tables 8 and 9).
However it is not clear from the report of the study that the two villages were similar in their characteristics important in measuring the health of the community. However the final report of this study is still being completed and cannot be assessed on the limited information available at the present time.

The present study was carried out from January to May 1972. In the same year BORNSTEIN AND KREYSLER (1973) carried out a survey to 'Investigate some of the social factors affecting attendance at the Under Fives Clinic' in a densely populated rural area of Tanzania. This survey was not designed to study the use made of the Under Fives Clinic but aimed at obtaining information on attitudes to clinic attendance. A substantial amount of information on the practical problems connected with clinic attendance was obtained, including reasons for non attendances and the part played by the local leaders in giving information on clinic activities. However the study was limited in that it did not investigate the children who did not attend the clinic, nor were the clinic activities assessed. From this study it was not possible to gain any impressions on the improvements in the health of the children in the community which might have occurred as a result of the Under Fives Clinics.

A study in Lusaka WOLGEMUTH (1972) carried out in May - August 1972 had the objective of evaluating the Under Fives Clinics in Zambia. The methodology employed consisted of a field and a clinic study. The latter comprised the major portion of the study. Seven Under Fives Clinics in the township of Lusaka were investigated. The clinic cards of the children attending on the day of survey were used as the source of information.

Much information was available on the immunisation status of those children attending the clinic, their weight in relation to age and the total number of attendances per child. However all this information was only available for those children who attended the clinic. The field survey was intended to serve as a source of information on the socio-economic and demographic features of the community that lived at a distance of half a mile from one of the clinics. However, although 396 mothers were taken into the field survey, less than twenty of them were able to produce their 'Road-to-Health' cards on the day of interview.

The method used for the field sampling technique involved an aerial map of the township of Lusaka. The town was divided into eight regions and the number of houses per region were counted. The proportion of houses that each region contributed to the entire township was calculated. These proportions were then used to dictate the proportion of houses each region would contribute to the population sampled. This system of subdividing the town would not allow a simple stratification of the sample by distance, from the clinic. To ensure that the sampling proportions were adhered to, it is important to distinguish between an occupied and an unoccupied house. Further more churches, office buildings and other uninhabited buildings must be excluded. It is not always possible to make these distinctions on an aerial map. In addition, for example a recent flood could have driven people away from their permanent homes. This could not be taken into account in this sampling technique. If an aerial map showed that 15% of the houses were in the flood striken sector then 15% of the sample would be expected to be drawn from it. However, in reality this sector may be uninhabited. Alternative methods to get round the problem would have to be decided upon.

The methodology used in the present study to evaluate the the Under Fives Clinics will now be discussed.

FIELD STUDY.

A. INTERPRETER. (SELECTION AND TRAINING).

The method of evaluation used in the field survey involved sampling dwellings at varying distances from the clinic. The author, who is a doctor from an Asian country, was well received and accepted in the African homes. She conducted the interview through a local interpreter. However, in the circumstances it was thought essential for the interpreter to be of a similar background to those who were being interviewed, i.e. a local person of similar social background and speaking the same language and dialect. She would be thus able to talk freely to the mothers and they would accept her without suspicion, as would be the case if she was a stranger. This arrangement contributed greatly to the co-operation obtained with the population. In the present study at the time the homes were visited the men were at work, and the author and her interpreter who were both women, met only women and children of the house. For this reason women were considered preferable to men as interviewers. However, this is not essential, as in a study carried out in Tanzania BORNSTEIN AND KREYSLER (1972) to investigate the social factors affecting the attendances at the Under Fives Clinic, the interviewer was a male medical assistant student and he obtained a response rate of 100%. Whoever administers the questionnaires he or she must of course be acceptable to the community being surveyed.

The investigator was fortunate in obtaining an interpreter who was an educated woman with a good knowledge of both English and the local language. All the interpreters were not directly connected with the local Under Fives Clinic. As they were not involved with the local clinic, any bias which might occur as a result of the mother modifying the answer to the questions, in order to please any interpreter who she associated with clinic staff, was removed. In Ilesha and Esa Oke the same interpreter, the wife of a local accountant, was employed. In Namitambo a girl who was training to be a teacher was employed, and a community nurse acted as interpreter in Mansa. Before the start of the survey the interpreter undertook a period of training with the author. The reasons for the study were explained, and the importance of translating the exact words of the questions and answers without any embellishments at each interview was emphasised. Although the author did not know any of the local languages it did not appear that any of the interpreters deviated from the instructions.

B. SAMPLING.

The method used for the identification of dwellings for the survey was a simple and practical one. A map of each area was obtained. The maps used in the present survey varied from, for example, a street map in Ilesha to aerial maps in Mansa and Namitambo. In Esa Oke a simple but accurate map was constructed by a local school teacher. In most areas of the world it should not be too difficult to obtain a suitable map drawn to scale. Aerial photographs may well be available for many parts of the world. Once the maps were obtained the system of geographic stratification of the areas was not found difficult to apply. (Already discussed in Chapter III)

C. QUESTIONNAIRE.

The same three questionnaires administered by interviewers were used in each of the four areas. These questionnaires attempted to seek information on a wide range of items including socio-economic, domestic and health. During the first week of the field study in Ilesha two questions from the questionnaires were found to be unsatisfactory and were excluded. These questions attempted to elicit information on time spent every day in collecting water for drinking and in collecting water for washing. (Questions 21 & 22 page 401) This problem arose after the author found that the concept of time was little understood by the mothers who were interviewed. Evidence for the lack of understanding of time by the mother was discovered when the author, at the end of a visit to a dwelling, would enquire from the mother how long she thought the interviewing team had spent in her dwelling. The answers received ranged from five minutes to three hours, while the actual time spent was usually between sixty and eighty minutes. Very few gave accurate answers. The majority of these mothers were illiterate and their concept of time was very different to that of the literate. FUGLESANG (1973) stressed this basic difference in the understanding of concepts of time, shape, volume and weight. It is important in designing questionnaires that are to be used among the illiterate population, to devise questions that do not depend upon these concepts.

The other questions in the questionnaires which led to some confusion were those dealing with diseases, i.e. measles and whooping cough (Questions14 & 15 questionnaire 3 page 404) In the Yoruba language there was no specific word for measles and the direct translation of the word used to describe measles used by the Nigerians means a 'rash'. The problem was overcome with some difficulty when the interpreter managed to explain to the mothers the clinical picture of measles and this they seemed to understand. The same problem arose with whooping cough. However, a demonstration of a 'cough with a whoop' helped most mothers to recognise the disease. In future surveys, if specific names are used in such questions it is suggested that the use of diagrams or pictures depicting the disease or possible tape recordings should be used where this is appropriate. For example a photograph of a child with a typical measles rash or tape recordings of a child coughing with a whoop for pertussis.

Others have suffered from similar difficulties. A relevant study is that by MOFFAT AND NGANWA-BAGUMAH (1971) who in an article entitled "Do we mean what they say" points out the difficulties that arise when certain medical terms are translated into the local language. Their study was carried out in an area in Uganda where the local language was Runyankore They found that the terms used by the local health workers for diseases such as smallpox and tuberculosis were misunderstood by the mothers. "The word used for smallpox (omuze) was immediately understood by one group as being smallpox while the other interpreted it as measles, scabies, chicken pox, leprosy and even some non dermatological conditions". They emphasise that health workers should not assume that their listeners always understand what they are talking about. They conclude that "This is a field in which linguists, educationists and social anthropologists might be of some help to the health staff, in a further professional enquiry into the problem".

In one of the survey questionnaires, i.e. No. 2 a large group of questions were included on the health knowledge and practice. Some of these questions (Appendix 2 quest: 16 & 17 pg 402) did not seem to be well understood by all mothers. Some of the answers to these questions were quite irrelevant and some mothers seemed unable to answer them. However not all questions posed problems for these mothers. It is possible to identify the questions that yielded simple and accurate answers. In planning evaluation surveys in the future it seems reasonable to use only those questions that have been tried before and found to yield valid answers. Though the present set of three questionnaires had 86 questions in total, it seems much more feasible for large scale evaluations carried out simultaneously in many areas, to limit the numbers of questions to between ten and twenty. Those questions found most useful in the present survey, some twelve in all, will be detailed later.

D. RESPONSE RATE.

The response rate in this study was highly satisfactory at 99.8%. Of the 1020 dwellings visited the occupants of 1019 consented to being included in the survey. The only refusal was from the occupants of a dwelling who were "Jehovah's Witnesses", and who declined to co-operate on religious grounds. This high overall response rate, coupled with the method of sampling employed, gives confidence that the findings may represent those of the community as a whole.

E. SAMPLE SIZE.

The author stayed a month in each of the four areas to complete both the field survey and the clinic study. Approximately three weeks were spent on the field survey in each area. It was possible in this time to visit 183 dwellings in Ilesha, 197 in Esa Oke and 200 each in Namitambo and Mansa. Each of these dwellings contained at least one child under the age of five. In Ilesha the average interview time was eighty minutes. The average number of children per dwelling was greater in Ilesha than in all other areas, and this resulted in more questionnaires seeking information on the family and the children being completed in Ilesha, than in any other areas. As a result 434 children were seen in Ilesha, 405 in Esa Oke, 261 in Namitambo and 314 in Mansa. Ilesha was also the first area studied and as such the speed with which the survey was conducted (example in completing questionnaires) was slightly slower than in the other areas. With the experience gained in Ilesha the average time spent per dwelling in Esa Oke was reduced to sixty five minutes, in Namitambo to forty minutes and in Mansa to fifty minutes. A further problem arose in Ilesha when the interpreter asked for two and a half days leave in order to attend to her sick child. To maintain uniformity in the questionning no interviewing was carried out while she was away. It was important to keep the same interpreter, as recruiting a new interpreter might have introduced biases into the data collected at interview.

In the survey a representative samples of children under the age of five, who were living at varying distances from the clinic, were required: this sample should include children who attended the clinic and those who did not. In dwellings occupied by more than one family, the number of children under the age of five would be expecced to be greater than in dwellings with one family only. Where multi-occupation was common the sample would contain fewer dwellings, and similarly, where multi-occupation does not occur the sample would contain more dwellings. It is possible in areas where multi-occupation does not occur, that a sampling technique based on dwellings would give a sample with fewer biases than in a situation where multi-occupation exists, as a greater range of families and their socio-economic circumstances could be sampled.

In future surveys, before deciding on a technique using dwellings as the primary sampling unit, it is necessary to decide whether multi-occupation is at all common. In such a situation, some other method, for example taking one family per dwelling at random, or even two or three families, may yield a more satisfactory sample.

In the present survey, the techniques decided upon in the original plan were maintained in order to ensure compatability in each area. As a result in Ilesha and Esa Oke more children were seen than necessary, and thus involved the author in more work than was required. However these comments are made, of course, with hindsight.

Within the geographically defined areas, dwellings as the sampling unit did not pose any problems. Identifying houses using the sampling methods as defined in practise was easy, and there was usually little doubt as to which road the front of the dwelling faced. WEBB (1969) took every fifth dwelling into her sample; she found that the mothers in the intervening dwellings also wanted to be included in the survey. For this reason consecutive dwellings were sampled in the present survey and the above situation was avoided. However, a small problem arose due to the sample being drawn from one side of the street only. Those living on the opposite side of the street, who saw their neighbours being interviewed, often wanted to be included in the survey themselves. When they were persistant in their request the author, in order to maintain the goodwill of the people, filled in a questionnaire and weighed their children. However, as these children were not within the sample frame their questionnaires were excluded from analysis. Six such extra questionnaires were filled in Ilesha, three in Esa Oke and two each in Namitambo and Mansa. The rules for sampling within a grid system were sufficiently simple that in any future studies they could be taught to para-medical and auxillary health workers.

Though this survey was carried out by the author who is a doctor, in future surveys of this type it would be sensible to use less skilled personnel as it would be less expensive. Further this category of person may be more readily available for carrying out this type of survey. Almost any literate person could be taught this sampling technique. It should be possible to train secondary school children in this technique as a classroom exercise, and in addition be used as interviewers in field surveys. This makes it possible to do such surveys quickly, on a large scale and at low cost. Further it makes the community involved in evaluating its own health service, and this in turn should make them more aware of their health problems, and also the available sources of health care. These surveys could be repeated as and when necessary; for example, annually to monitor the effects of any changes in medical care services.

This sampling technique could be carried out, not only in surveys to assess health status, but also in any other surveys of for example dietary economic and educational circumstances where samples are required at varying distances from a particular location.

The only modification to the original sampling technique was that made in Esa Oke, as discussed earlier in chapter 111

The original estimate of sample size suggested that a sample of 200 dwellings would give an adequate number of children under the age of five. It was not known what percentage of children would be clinic attenders. MORLEY (1972) thought about 10% of children in Ilesha would be non-clinic attenders. In the other areas even such uncertain estimates were not available.

In future studies it would be useful to carry out a pilot study to estimate the number of children under five per dwelling, and also the proportion of clinic attenders to non attenders. In this way it would be possible to choose the sample in such a manner that the required number of children would be obtained.

F. DWELLINGS WITH NO CHILDREN UNDER THE AGE OF FIVE.

Of the 1019 dwellings visited (i.e. dwellings occupied and open) 780 had at least one child under the age of five who was present at the time of visit and had slept in the dwelling the previous night. In Ilesha, Esa Oke, Namitambo and Mansa 73.5%, 79.1%, 83.3% and 70.9% of dwellings respectively contained at least one child under the age of five living in the dwelling. (Table 14). This information should be useful in planning future surveys as it provides an estimate of the total number of dwellings in these areas that need to be identified in order to yield the required number of dwellings with children under the age of five. (In the present study sixty five dwellings in Ilesha, fifty two in Esa Oke, forty in Namitambo and eighty two in Mansa did not have any children under the age of five and were thus not included in the survey). In some of the dwellings without children under five the occupants said there was a child

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Thus in deciding in future surveys on the number of dwellings to be visited to study children under the age of five it would be useful to know what proportion of dwellings in each of the areas would not be expected to have any children under the age of five.

G. NUMBER OF CHILDREN PER DWELLING.

No reliable data was available on the number of children to be expected per dwelling. WEBB (1969) in a pilot study in Ilesha, found an average of three children per dwelling. KIMMANCE (1970) working in Swaziland, reports that 2.8 children per dwelling could be anticipated. If a census of children for each area was available then it would be possible to readily calculate the expected number of children under five per dwelling. However, this information is usually not available for most industrialised countries, let alone for the non industrialised ones. This information would be useful not only for the health planner but also for the educational and social services and welfare authorities. The health planner could use this information in deciding the type of service he should provide, the staff, the buildings and equipment for these age groups of the population. Similarly the educational authorities could use this information in deciding on the number of primary school places and teachers required, for the welfare authorities too this knowledge would be a factor in planning the provision of creches and play groups for the pre-school child.

In the present study the average number of children under five per dwelling in Ilesha was 2.37., in Esa Oke 2.05., in Namitambo was 1.30 and in Mansa was 1.57. (Table 15) In Ilesha 35% of dwellings visited had only one child under the age of five, while in Namitambo 72.5% of dwellings visited had one child only under the age of five. Moving to Table 38 it is seen that the number of children under the age of five per family is more or less similar for all four areas, except for the one family in Mansa which had five children under the age of five (this included a pair of twins). In all other families in each area there were one, two, or at the most three children under the age of five. The modal value for the number of children under the age of five was one (Table 38)

H. <u>BIRTH INTERVAL</u>.

This is defined as the time interval between two subsequent deliveries for a mother. MORLEY (1973f)reported that the average birth interval in a rural society in West Africa was 34.7 months. Therefore a mother on the average at any one point in time would be unlikely to have more than two children under the age of five. However Morley points out that in a study carried out in South America it was found that the average birth interval was only 17.25 months. Here, the average mother could have up to three children under the age of five at any given point in time. Morley stresses that the African mother is thus at a distinct advantage over her South American counterpart as she has only to look after two children under the age of five at any given time. Further, the child from a oommunity with longer birth intervals stands to benefit more than a child who comes from a community where the birth intervals are shorter; the former child would be expected to receive more 'mothering' as it would remain the youngest child for a longer period of time. The admission of mothers with their sick babies to hospital is a practise found in many parts of Africa. The advantage of this system has been stressed by many workers. KING (1966). Thus the African mother with only one, or at the most two children under the age of five, will find it easier to be away from home, for example to take her sick child to hospital. The situation for the South American mother would be more difficult as she would perhaps be reluctant to leave several children under the age of five, in order to attend at or stay in hospital with one sick child.

In the present study, though specific questions on birth intervals were not asked, the findings from other questions can be used to deduce birth intervals. The proportion of families having one or two children under five was 96.3% in Ilesha, 98.0% in Esa Oke, 97.7% in Namitambo and 96.2% in Mansa. This suggests that birth intervals in these areas are similar to those found by Morley.

I. PERSONS PER DWELLING.

In the West African society many dwellings are multi-occupied, i.e. two, three or more families live in the same dwelling, each with their own children. Usually these families are related and the term "extended families" is applied to them. Although most demographic data for developing countries list number of persons per dwellings and numbers of persons per family, little information is published for number of families per dwelling. However, information from the Eastern Region of Ghana collected during a household budget survey conducted by DUTTA ROY (1969) throws some light on the situation in West Africa. He finds a marked difference between the numbers of families per dwelling in the rural and urban areas. (His definition of "house" is identical to the author's "dwelling" and his definition of "household" is identicalwith the author's "family".)

TABLE 96.

DISTRIBUTION OF DWELLINGS BY NUMBER OF FAMILIES PER DWELLING BY AREA.

NUMBER OF FAMILIES PER DWELLING	GHANA (DUTTA ROY)				NIGERIA (PRESENT STUDY)			
	URBAN		RURAL		URBAN (ILESHA)		RURAL (ESA OKE)	
1	159	18.5%	179	51.4%	103	56.3%	134	68.0%
2	61	19.2%	87	25.0%	44	24.1%	37	19.0%
3	65	20.4%	44	12.6%	22	12.0%	18	9.0%
4	54	17.0%	23	6.6%	10	5.5%	6	3.0%
5	29	9.1%	10	2.9%	2	1.1%	2	1.0%
6	19	6.0%	3	0.9%	1	0.5%		
7	13	4.1%			1	0.5%		
TOTAL	318	100.0%	348	100.0%	183	100.0%	197	100.0%

His data on the distribution of households per dwelling in the urban and rural areas in Ghana are given in Table (96) Dutta Roy's results can be compared with those obtained in the present survey. In West African areas, i.e. Ilesha and Esa-Oke, it can be seen that 12% and 9% of the dwellings respectively have three families in them. Ten dwellings in Ilesha and six in Esa Oke had four families in them. These findings are similar to those in Ghana. It must be remembered however that in the present survey only families with children under five were considered. The presence of more than one family in a single dwelling could have important effects on the pattern of disease among children in these dwellings. In the present study the modal number of persons per room was three (Table 66) However, in Ilesha seventeen children came from dwellings which had up to six occupants per room. The presence of a large number of children living together favours the spread of communicable disease, and the isolation of a sick child is not really feasible in such a situation.

Although differences in the incidence of disease in children living in multi-occupied dwellings in Ilesha and Esa-Oke and the other two areas might be expected, the design of the present study which was a point prevalence survey, (and which obtained information on the health status of children at the time of the study) cannot be used to make any useful comparison between the past health of the children that might establish whether or not there was any difference.

K. FREQUENCY OF CLINIC ATTENDANCE IN RELATION TO DISTANCE OF DWELLING FROM CLINIC.

The relationship between distance of dwelling from the health centre and the attendance at out patients clinics has been noted by many authors. BRYANT (1969) states "Distance is a critical factor in the interplay of health resources and needs. People travel to reach health facilities - health workers travel to reach people". Studies in East Africa have shown a close correlation between the proximity and the use of health facilities. KING (1966) showed that in Uganda the average number of out patient visits per patient halves for every two miles that people live from a hospital, every half a mile from a dispensary and every mile from an aid post. Not many people would walk more than a few miles for out patient services, particularly if they have to carry their children. Improved public transport would presumably change this situation by shortening the journey time and eliminating the necessity for carrying children over these distances.

The present study was concerned with investigating any relationship between the use of Under Fives Clinic services in children living up to and not beyond 2½ miles from the clinic. The sample surveyed, as already noted, was stratified by distance. The findings in relation to distance are given in Table 77 . In Ilesha, of those living within half a mile from the clinic, 5% were non attenders, and at distances of 2½ miles from the clinic 26% of the children were non attenders. In the other survey areas there did not seem to be a difference in the proportion of non attenders at varying distances from the clinic.

The distances in this study from the dwelling to the clinic were taken "as the crow flies". However, the distance travelled to reach the clinic is usually much greater, because of the lack of direct roads leading to the clinic. It was estimated that a mother living at a distance of $2\frac{1}{2}$ miles from the clinic in Namitambo would have to actually travel four to five miles during the dry season, but in the rainy season this distance could be increased by about two miles, as the most direct routes would usually be impassable due to flooding. Except in Ilesha, distance does not seem to be a critical factor in the uptake of child health services. It must be noted that in this study the maximum distances "as the crow flies" were up to and not beyond $2\frac{1}{2}$ miles. A significant fall in the uptake of services might have occurred if families living at greater distances from the clinic were sampled. So as to maintain a uniform sampling technique, no deviation was made from the original planning, to sample up to, and not beyond $2\frac{1}{2}$ miles. In the planning of any future surveys it might be useful to study the uptake of services at distances greater than $2\frac{1}{2}$ miles. This additional information could be useful to health planners when deciding on the siting of new Under Fives Clinics, when the numbers of children, for example, living at varying distances from the clinic, and who might be expected to visit the clinic could be determined. From Table 83b in Ilesha it is quite clear that with increasing distance of the dwellings from the clinic attendances became less frequent than in those children who lived close to the clinic.

In Ilesha this pattern is quite consistent. It is of course no surprise that with increasing distance there is a decrease in proportion of clinic attenders, and those who attend, do so less often. However, this study provides factual confirmation of this in relation to the Under Fives Clinics at Ilesha. However, in the other three areas it is a little surprising that while the proportion attending the clinic does not vary with distance from the clinic, that frequency of attendance should drop off. This situation could have arisen due to a biased sample, for example if a larger proportion of the attenders were sampled at greater distances from the clinic. This seems an unlikely occurrence. There does not appear to be any obvious reason for this finding.

L. COMPARISON OF CLINIC ATTENDERS AND NON ATTENDERS.

A clinic attender is, by definition, a child under the age of five who has at some time attended the Under Fives Clinic. As proof of this he or she should ideally have the 'Road-to-Health' Card issued by the clinic. This card is kept at home by the mother and is brought with the child when attending the clinic. A non attender, by definition, is a child who has never attended the Under Fives Clinic, and hence is a child who has never been issued with a 'Road-to-Health' card. Some of the clinic attenders, however, did not have their 'Road-to-Health cards available for inspection on the day of survey. This was either due to the card being lost, or to their being locked away. As discussed earlier, one of the great advantages of the home based records is that it would be available at all times. If the child is taken ill suddenly, and requires treatment, then the 'Road-to-Health' Card could be taken to hospital with the child. In house-to-house surveys these cards serve a very useful additional purpose, in that not only does this provide evidence of clinic attendance but the use made of the clinic services is also documented. It has been assumed in this study that these records are true and accurate.

M. CARD LOSS.

The strongest arguments against home based records are on the grounds that these cards tend to be not adequately looked after and sometimes lost. In the present survey the non-availability or loss of cards for children claimed to be clinic attenders is small. Table 63 . The card loss for all areas was 8.3%. However, in Ilesha and Esa Oke the cards lost were 1.0% and 1.0% respectively, while in Mansa and Namitambo this was 17.0% and 21.0% respectively. A survey in India carried out by CUTTING (1971), it was found that the card loss was 6%. The differences in card loss between the study areas are striking. The information collected from the clinic study highlights two main differences between the clinics in Nigeria (Ilesha and Esa Oke), and those in Central Africa (Namitambo and Mansa). The clinics in Nigeria have been in existence for twelve and fifteen years respectively, while that in Namitambo for three years and in Mansa for three years. The Central African clinics may not have been established for long enough to impress on the mothers, the benefits to the health of their children, that could be achieved by regular clinic attendance. This could be one of the reasons why mothers are less careful with their children's 'Road-to-Health' cards. Also it is interesting to note that in Mansa and Namitambo the cards are issued free, while in Esa Oke and Ilesha a charge is made for them. It could be that anything acquired free of charge does not appear to be as important as things that are paid for. If the latter explanation is correct, then it would be worthwhile for the governments in Malawi and Zambia to make a nominal charge for these cards and thus possibly reduce the heavy losses of cards seen at present in these areas. Also it should be borne in mind that a mother who has never taken her child to the Under Fives Clinic, instead of admitting this could say that she has lost the card. This would produce a false increase in the number of "children whose cards were lost" and a corresponding false decrease in the "numbers of children who never attended the clinic". However, it seems unlikely that in this study this happened, as there was nothing to be gained by falsely claiming to be a clinic attender. Also, wherever possible, cross checks were carried out to establish if the children whose cards were lost were in fact clinic attenders.

In Ilesha 13% in Esa oke 9% children seen in the field survey had never attended the Under Fives Clinic. Namitambo and Mansa the figures were 32% and 16% respectively. Again in those clinics which had been established for a longer time in West Africa the proportion of those who had not attended the clinic was much lower. (Table 63)

The study, as originally designed, some comparison was expected between attenders and the non attenders. However, in practise this was not possible as the non attenders were a very small group (16%) and no worthwhile comparison could be made.

N. REASONS FOR CLINIC ATTENDANCE AND NON ATTENDANCE.

In questionnaire No. 2 specific questions were asked on ' 'reasons for Under Fives clinic attendance' and 'non attendance'. Of those reasons given, treatment, weighing, health education and immunisation comprised the majority of answers received. Table 45. Though the majority of mothers in each area gave one or more of the above reasons for attending the clinic, the most frequently given reason for clinic attendance for each area was not the same. For example, in Ilesha 35.0% of the mothers attended the clinic in order to obtain treatment only, i.e. when the child was ill. However in Esa Oke the most common reason for clinic attendance was for a combination of treatment and health education. In Namitambo too,treatment was the most popular reason for clinic attendance, while in Mansa the clinic activity that caused most mothers to attend the clinic was weighing of children. In all four areas routine distribution of 'free milk' or other food supplements were not carried out. In Namitambo milk supplements were sometimes available for distribution as a supplementation for the seriously malnourished children. It is however satisfying to note that distribution of free milk was not given as a reason for attending the Under Fives Clinic except by three mothers in Namitambo. The experience in these clinics is an argument against those who suggest that giving out of free milk is necessary to create a high attendance level.

BORNSTEIN AND KREYSLER (1972) stated an "addiction" to free supplementary food supplies for children might have a seriously negative effect on their own production potential, which is vital in a largely subsistence economy. In their study in Tanzania, which had the objective of establishing the reasons that mothers gave for attending the Under Fives Clinic, they concluded that "free distribution of medicines and food were clearly the most appreciated activities of the clinics in one area of study, and clinical examination the other clinic area". They added that no mother mentioned health education as a reason for clinic attendance. In the present study health education in combination with another activity such as treatment was mentioned by 30.4% of the mothers in Esa Oke in contrast to the other areas, and in combination with weighing and/or immunisation was mentioned by about 10% of all mothers. There does not seem to be any clear explanation for the increased importance paid to Health Education in Ese Oke in contrast to the other areas. The level of Health Education, in each clinic seemed to be similar, as was discovered during observational sessions in clinic study. The mothers in Esa Oke may have been more receptive to Health Education or the Health Education given in Esa Oke may have been more effective. (Table 45)

The importance of curative treatment in attracting attendance at Under Fives Clinics is thus clearly seen. Immunisations, by itself, does not seem to be a major reason for clinic attendance in any of these study areas.

In Mansa "weighing of children" is seen to be a very important factor in clinic attendance. The mothers attending this clinic may have been taught the need for checking regularly the weights of their children. It is possible that the National Nutritional Programme in Zambia, which included a particular stress, on recognition and treatment of malnutrition, may have accounted for the mothers attending the Mansa clinic, with their children, to give this as a main reason for clinic attendance.

What priorities should be given in future to the different clinic activities? If the immediate material benefits of treatment outweights the long term improvement by education and immunisation, then the main targets of a preventive service may be missed. However, it can be seen from the percentages of children receiving immunisations (as recorded from the 'Road-to-Health' cards) and also from the clinic study, that a fair proportion of children attending the clinic are receiving immunisations. It could be that the clinics are seizing upon the opportunity of immunising the children when they are brought to the clinic for treatment, or advice. In the informal discussions with the mothers it did not at any stage transpire that immunisations were unacceptable. However, this has not always been the case. At the time of the smallpox outbreak in Western Nigeria in 1957 a great many mothers refused to have their children immunised and at that time there was a general fear of immunisation. MORLEY (1970). Another factor to be kept in mind is that not all mothers appreciated the reasons for having their children immunised. In the families where all children under the age of five attend the clinic, only 51% of mothers thought that immunisations were given to prevent disease. Table 42, 15.8% or 133 mothers, who took all their children under the age of five to the clinic gave answers which were categorised as "other". These mothers said that vaccinations were given "for convulsions" "for worms" "for diarrhoea" "for swelling" for "fever". It could be assumed in these cases that the mother misunderstood the true reasons for immunisation and assumed that they were curative injections. The health education lectures and discussions must therefore be directed to emphasise the needs for immunisation, and it is possible that with true emphasis a better result could be obtained with immunisation programmes in these areas.

In the present study, the mothers who did not take any or all of their children to the Under Fives Clinic were asked to give reasons for not doing so. There was wide variation between areas in the answers received. In Ilesha the most common reason was that "the mother thought that it was not necessary to take a child to the clinic" 39.5% of mothers gave this answer. Table 46. From the above answer it could be assumed that the mother treated the Under Fives Clinic as a place she could take her child for curative treatment only. Thus it is not surprising that 35.0% of mothers in Ilesha who attended the clinic (Table 45) gave "treatment" as the only answer for attending the Under Fives Clinic. In Esa Oke 15.6% of mothers gave the same answer, it was unnecessary to take their child to the Under Fives Clinic. However, in this area 34.4% of mothers gave answers which were classified as "other". These included families who were visitors to the areas, who felt they were going to live in the area for too short a time to warrant registration at the clinic. Also included in this group were mothers (2) who said that their husbands objected to their attending the clinic. In Namitambo 66.1% of mothers again said that they thought that it was not necessary to attend the clinic, and it is interesting to note that 49.3% of mothers attending the clinic in this area gave treatment as the reason for attending. It is noted that in Mansa the reasons for not attending the clinic were due to the "clinic being too far" and "inconvenient". These reasons were also given by 12.9% of none attending mothers, in Namitambo, but none of the mothers in Ilesha or Esa Oke gave these as reasons for not attending the clinic. Table 46. From the majority of answers received for reasons for attending the clinic and also for reasons for non attendance at the clinic, it becomes clear that many mothers consider the Under Fives Clinic as a place where only sick or ill babies are taken. They did not seem to grasp too well the need for regular attendance for healthy children, and the need for preventive care. These same mothers, however, seem to have a different attitude towards ante natal clinic attendance. They consider that ante natal clinic attendance is necessary even when the mother feels fit and well.

A distribution of families by reasons given for ante natal clinic attendance shows that 72.5% of mothers in Ilesha, 91.1% in Esa Oke, 89.2% in Namitambo and 82.3% in Mansa attended the clinic as routine for regular check up. Table 48.

Only a very small percentage, i.e. 16.1% overall said they attended the clinic for treatment only. So clearly there is evidence that the mother considers the ante natal clinic as a place she should visit regularly during her pregnancy.

From this study, there seems to be good evidence that a substantial proportion of mothers who, while they know of the Under Fives Clinic in their area, yet do not use the facilities provided. Secondly, those who use the facilities tend to use only the treatment facilities and not those concerned with disease prevention. It seems therefore, that in all four clinics, the objective of covering the whole population of children under the age of five, with curative and preventive services, has not been wholly achieved. There seems good reasons therefore, for the development of programmes aimed at testing the reasons, for mothers not attending the clinics with their children, and for not fully using the preventive services provided, with a view to developing a programme to persuade mothers, that it is to the childrens advantage to use the clinic facilities to the fullest extent. As a first stage the results from this study have been conveyed to the staff of the four clinics.

O. AGE DISTRIBUTION OF CHILDREN.

Of the 1414 children taken into the survey it was possible to establish the age in 1393 children. This was mainly due to the availability of the home based 'Road-to-Health' cards. The dates of birth were entered in these cards, and as these cards are usually issued very early in life the available dates of birth from these cards could be considered accurate. In this study it was possible to estimate the ages of 98.5% of the children in the survey. This is an almost unique situation for Africa especially for communities living in the rural areas. CUNNINGHAM (1967) working in Imesi (Western Nigeria) found it possible with the help of the 'Road-to-Health' cards to establish accurately the dates of birth of 96.5% of the children in his study.

In each of the four areas, children in the 0 - 1 year age group comprise a larger proportion of the sample than children in the 4 - 5 year age group. (Table 97)

TABLE 97.

Age	Ilesha	Esa Oke	Namitambo	Mansa	All
(a) 0 - under 1 year	24.8%	22.7%	34.8%	30.8%	27.3%
(b) 4 - under 5 years	17.4%	16.7%	8.2%	10.9%	14.0%
Difference (a - b)	7.4%	6.0%	26.6%	19.9%	13.3%

The simplest explanation for this difference is that the group of older children have had a longer exposure to the force of mortality than the younger age groups and therefore fewer of them have survived, and therefore constitute a small proportion of the under fives group than the children under the age of 1 year. This explanation is in accordance with the Life Table for Tropical Africa described by BRASS. CARRIER AND HOBCRAFT (1971) These Life Tables shows that due to mortality the proportion of children alive drops consistently with increasing age. Assuming constant birth rate, each annual birth cohort would lose members through death as the cohort aged. Thus the younger cohorts would contain larger numbers of children than the older cohorts. Assuming no change in the birth rates in all four areas it seems fairly clear that the smaller proportion of children in the 4 - 5 year age group in Namitambo and Mansa could be interpreted as indicative of a higher mortality rate among the under fives than in Ilesha and Esa Oke.

A further explanation could of course be that a family planning programme instituted very recently in Ilesha and Esa-Oke would have decreased the proportion of children in the 0 - under 1 year age group for these areas. However, no such programme had been recently instituted in these areas.

However there are other factors that might decrease the proportion in the older age groups and one of these is migration out of the area, and this could account for the lower proportion of older children.

Although there seems to be several possible reasons for the differences in proportion of children in the 0 - 1 years age group and in the 4 - 5 year age groups, yet one cannot be sure as to which of the above is the correct explanation.

P. WEIGHTS OF CHILDREN.

In the present survey it was decided to weight all children under the age of five taken into the study. Details of weighing techniques and scales used are given in Chapter 111
Of the 1414 children in the study 1391 were weighed. 23 children refused to co-operate and hence were not weighed. Thus for 98.4% of the study children accurate weights were available. There is no reason to believe that the absence of weights for 1.6% of the children would introduce bias into the comparisons of weight made in this report.

FIGURES 15 to 18 show the distribution of mean weights for children by clinic attendances and by area. In these Figures the children have not been divided into further groups by sex. This was intentional in order that the numbers in each sub group would not become too small for comparison.
In any event there were no systematic differences in weight between the sexes. These Figures show that the weights of children who attend the Under Fives Clinic, and the weights of the clinic non attenders, are similar. It may appear therefore that by attending the Under Fives Clinic there was no advantage as far as weights of children were concerned. However, from a point prevalence study it is not possible to obtain serial weights of children over a period of time. Without information on the progress in weight of a child over a period of time, it is not possible to draw conclusions on the effect a clinic could have had on the nutritional status of the child. Further, it must be remembered that a clinic attender, by definition, was a child who had attended the clinic at least once. It is also possible, that those children who attend the clinic only infrequently have not had the opportunity of taking advantage of the health education and other benefits available at the clinic, and as such their weights may not be appreciably affected by clinic attendance. The other possibility is that those who attend the clinic are, as a group, children who are regularly underweight as a result of intercurrent illness. If such is the case, then it could be presumed that had the clinic attenders not attended the clinic, then their weights might have been even lower than their present weights. It could also therefore

be possible that the non attenders were in fact the most healthy children in the community. There is no evidence either way to test these ideas. However the reasons given for clinic attendance emphasise that a large proportion of mothers attend the clinic only when their child is sick. Table 45 Also 41.3% of mothers in all areas who did not take their child to clinic felt that it was not necessary to do so. This implied that they did not consider it necessary to attend the clinic routinely for preventive measures and health education. So the idea that the healthy children may not be attending the clinic while the ill ones do, may be a possibility.

MORLEY, WOODLAND, MARTIN AND ALLEN (1968) described a study carried out in Imesi in the Western region of Nigeria during the period January 1957 and August 1963. The mean weights of children in the Imesi study are compared with the mean weights of children seen in the present study for the two West African areas, i.e. Ilesha and Esa Oke. Tables 98 and 99. Imesi is a village situated about twenty five miles from Ilesha and forty miles from Esa Oke. Though the present study was carried out ten to twelve years after the Imesi study, it is interesting to note from the Tables that the mean weights for boys and girls for each age group has remained more or less similar. It must be however kept in mind that the children in the Imesi study were Under Fives Clinic attenders who were regularly supervised at the clinic. So ideally the children from the Imesi study should be compared with the clinic attenders from the present study. This was not attempted as it has already been shown that there was no appreciable difference in

TABLE98.

DISTRIBUTION OF MEAN WEIGHTS (DECIMAL KILOGRAMS) BY AGE FOR BOYS UP TO THE AGE OF FIVE IN ILESHA, ESA OKE AND IMES-ILE.

AGE	ILESHA NIGERIA 1972	ESA OKE NIGERIA 1972	IMES-ILE NIGERIA 1957 - 63.
3 months	5.5	5.3	5.4
6 months	6.6	6.7	6.6
9 months	8.5	6.9	7.5
12 months	8.8	7.9	8.2
18 months	9.5	9.6	9.6
24 months	10.9	10.8	10.8
30 months	12.4	11.0	11.9
36 months	12.2	12.1	12.5
42 months	13.7	13.1	13.7
48 months	14.6	13.5	14.4
54 months	15.4	13.9	15.1
60 months	15.9	14.1	15.5

*Morley, Woodland, Martin and Allen (1968). The original data for Imesi-Ile were in decimal pounds. Using 2.2 lbs = 1 kg as the conversion factor Imesi-Ile weights were converted in decimal kgms for ease of comparison.

TABLE 99.

DISTRIBUTION OF MEAN WEIGHTS (DECIMAL KILOGRAMS) BY AGE FOR GIRLS UNDER THE AGE OF FIVE IN ILESHA, ESA OKE AND IMES-ILE.

AGE	AREA		
	ILESHA NIGERIA 1972	ESA OKE NIGERIA 1072	IMES-ILE* NIGERIA 1957 - 63.
3 months	5.3	5.2	5.1
6 months	6.4	5.8	6.2
9 months	7.1	6.9	7.1
12 months	8.4	7.7	7.9
18 months	9.1	9.1	9.3
24 months	10.5	10.0	10.1
30 months	10.5	11.3	11.5
36 months	12.3	10.9	12.5
42 months	12.3	13.1	13.4
48 months	13.8	13.3	14.1
54 months	14.2	15.4	14.8
60 months	14.0	14.3	15.5

*Morley, Woodland, Martin and Allen (1968). The original Imesi-Ile data were in decimal points using 2.21bs = 1 kg as the conversion factor Imesi-Ile weights were converted into decimal kgms for ease of comparison.

the mean weights of the children who were clinic attenders and those who were not clinic attenders (Figures 15 - 18)

P. CLINIC ACTIVITY.

The activities carried out at an Under Fives Clinic and their success can be assessed in a number of ways.

(1) Records could be maintained at the clinic which contained information on the different activities carried out at the clinic. For example registers could be maintained to record the number of children immunised, the different types of immunisation used, dates when the specific immunisations were carried out, and separate records for each child to make it possible to find out what specific immunisations each individual child had received. If these records are maintained accurately then it would be possible to refer to them and obtain information on the activities pertaining to immunisation provided at the clinic. However this type of record keeping is expensive in terms of time, manpower, and storage space. In most Under Fives Clinics some degree of record keeping is necessary in order to calculate total number of children seen, immunisations given per session, week, months etc. to enable costing, staffing and other logistic details to be worked out. However, at the Under Fives Clinic this record keeping is reduced to a minimum due to the availability of the relevant information in the 'Road-to-Health' card kept by the mother. These record cards are another source of useful information on the clinic activity. In the present survey the information obtained from the 'Road to Health' cards of the children seen in the field survey were used to draw conclusions on the clinic

activities, policies etc. The information collected at clinics in this study were then compared with the findings from field survey.

(i) Clinic Attenders and Population coverage.

Of the 434 children seen in Ilesha 55 or 13% had never attended the clinic. (Table 64). The average number of new attenders at the Ilesha clinic was 756 per month, and the average number of visits made by old attenders was 11,841 per month. (Table 94)

TABLE 100.

	Ilesha	Esa Oke	Namitambo	Mansa
Non clinic attenders (from field study)	13%	9%	32%	16%
New attenders/month (from clinic study)	756	23	72	199
Re attenders/month (from clinic study)	11,841	1,696	170	900
Re attendance indicator (i.e. total old attendances/total new attenders)	15.6	73	2.3	4.5

The results for all four areas are given in Table 100

In the protocol drawn from 'The establishment of Under Fives Clinics in Malawi' the aim of the programme was stated to be "a 60% coverage of all children in Malawi". COLE KING (1971)

Certainly this has been achieved in Namitambo area. In the present study it was found that 68% of children in Namitambo area were Under Fives Clinic attenders. However, only 14% of the children made 76% or more of the ideal number of visits for their age. (Table 64). (However in the Malawi protocol it was stated that a child should at least attend six times in the first year of life. This is half the number stipulated by the other clinics as being ideal).

In Mansa 16% of the children were non attenders. FUGELSANG (1971) found that in the Luapula Province in Zambia about two thirds of the children under the age of five were clinic attenders. NALUMANGO (1974)has estimated that in 1972 35 - 40% of all children under the age of five in Zambia attended an Under Fives Clinic. He has used the <u>Re attendance Indicator</u> (Ratio of re attendances to first attenders) as a "Fairly reliable indicator of provincial trends and success of the Under Fives Clinic programme". He stresses that the Re attendance Indicator is not an actual re attendance rate per child since it included children who first attended in the previous year. If all mothers took their children to a clinic soon after birth and then re attended every months for the next twelve, and every three months for the next four years, then the target figure for Re attendance Indicator would be twenty eight or more". Using Nalumango's criteria for calculation, the Re attendance Indicator for the four areas is as follows:

Ilesha 15.6 Esa Oke 73 Namitambo 2.3 Mansa 4.5

In order to achieve the optimum target for the Re attendance Indicator the children should be seen early in life and then followed up regularly.

The following section of the discussion would apply to only those children who had a 'Road-to-Health' card on the day of survey.

(ii) Age Distribution of Clinic Attenders.

Monitoring of growth during the child's first five years of life implies continued attendance at a clinic from birth until the age of five years. A clinic which is successful in retaining children until their fifth birthday would have a clientele of all ages within these limits. A clinic which is only partially successful would have a disproportionately larger number of children attending for a particular age period usually at the younger age.

In Ilesha and Esa Oke the proportion of clinic attenders was seen to be fairly evenly distributed throughout the age range. However, in Namitambo and Mansa the proportion of clinic attenders fell as the ages of the groups increased. For example in Namitambo 34% of the children under the age of one year were clinic attenders while only 6% of children in the four to under five year age group were clinic attenders. (Table 75) WOLGEMUTH (1972) in her study carried out in seven clinics in Lusaka, Zambia found the following age distribution for all clinic children. (Total number of children was 1190)

TABLE 101

AGE DISTRIBUTION OF CLINIC ATTENDERS AT LUSAKA UNDER FIVES CLINIC

Age in months	Percentage of total
1 - 12 months	58.2%
13 - 24 months	19.1%
25 - 36 months	12.0%
37 - 48 months	5.9%
49 - 60 months	4.4%
TOTAL	99.6%

58.2% of the clinic attenders were in the 1 - 12 months age group while only 4.4% of clinic attenders were over the age of 48 months. These figures are even worse than the figures obtained for the age distribution of clinic attenders in Mansa in 1972 in the present study.

COLE KING (1971) reported that in a survey carried out in eleven clinics in Malawi, 57% of the attenders were under the age of one year. It is likely that as the clinics become established, then the clinics would attract children of all ages within the 0 - 5 year age group. However, if it is to be expected that the clinic attenders would have a relatively uniform distribution of ages within the 0 - 5 years limit, then this assumes that the community also includes an even distribution of children of these ages. However, it was discussed earlier that in Mansa and Namitambo the age distribution of children seen (clinic attenders and clinic non attenders)

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Table 51 showed an excess of children in the younger age groups. This could partly account for the greater number of children among the clinic attenders of the younger age groups. There is no information available on the age distribution of children in the community in Lusaka, from Wolgemuth's study.

Another reason to be taken into account of course is the time when the Under Fives Clinic was first started. If the clinic was started only recently then it is possible that the children nearing their fifth birthday would not be brought to the clinic. (They may have already had their immunisations etc. elsewhere). In clinics which have not been in existance for at least five years it is not reasonable to expect an even distribution of children at each age group within the five year period.

(iii) Age of child at first attendance at the Under Fives Clinic.

The children in each area are divided into five cohorts depending on their age on the day of survey. The Cohorts were as follows:

Cohort 1.	0 - under 1 year
Cohort 2.	1 - under 2 years
Cohort 3.	2 - under 3 years
Cohort 4.	3 - under 4 years
Cohort 5.	4 - under 5 years

In Ilesha it is seen that for all ages, 72% of clinic attenders (who had their card with them on the day of survey) had been to the clinic for the first time in the first three months of life. This figure was 89% in Esa Oke. However, in

Namitambo and Mansa the picture was somewhat different. In Namitambo in the first two cohorts 72% and 61% of children were seen at the clinic within the first three months of life. However, among the older cohorts only a small proportion of children were issued their cards in the first three months of life. (FIG. 20-23)

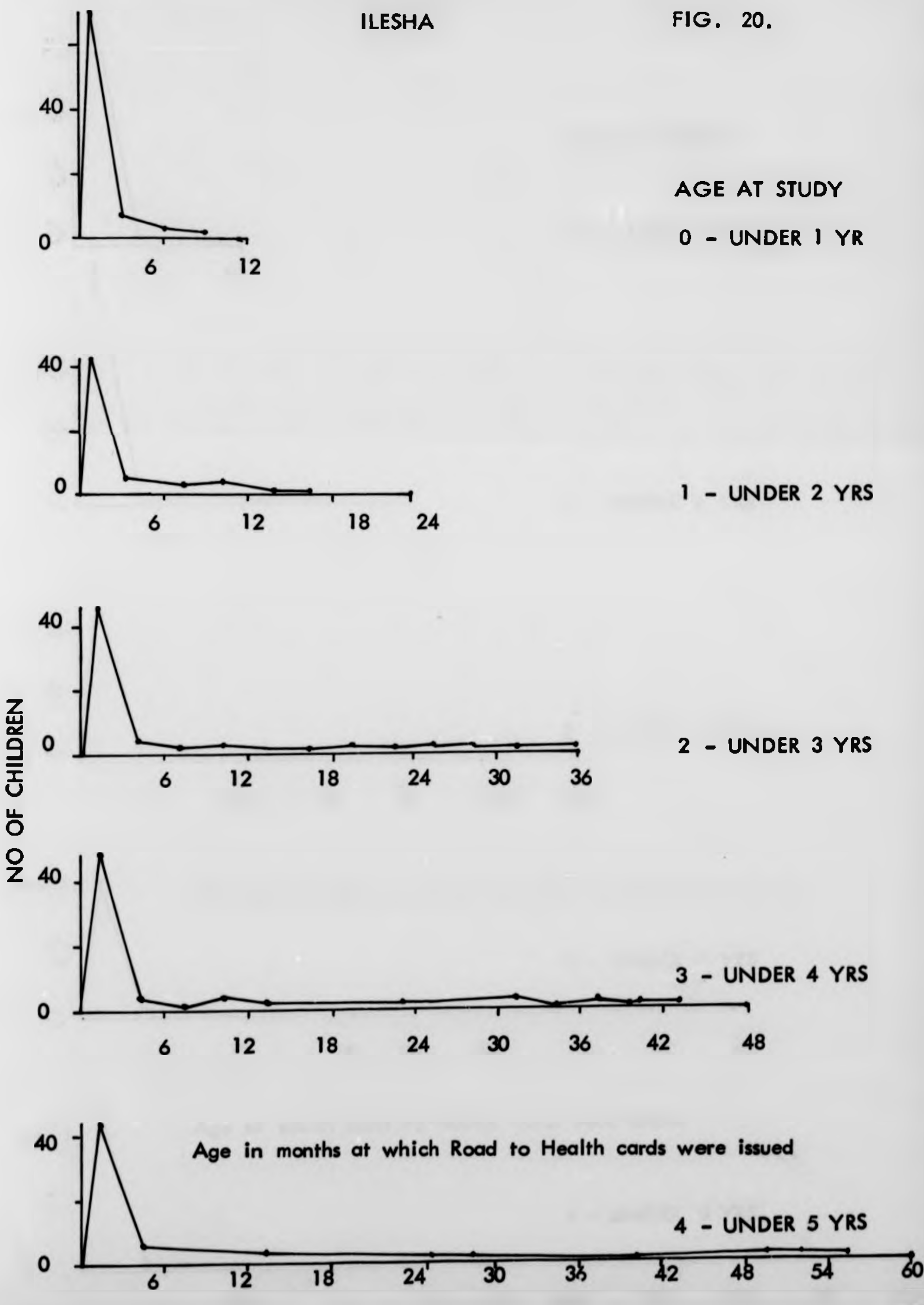
If one looks at the dates of birth of the children in the older cohorts it can be seen that these children were over the age of two years at the time of survey. Since the survey in Namitambo was carried out in March 1972, the children in cohorts 3, 4 and 5 were born prior to March 1970. Since the Under Fives Clinic in Namitambo was started in 1969, children born prior to and around the time the Under Fives Clinic was opened, could not have been issued with a 'Road-to-Health' card in the first three months of life.

In Mansa too, in the first 2 cohorts, 70% and 26% children respectively were issued their 'Road-to-Health' cards in the first three months of life. These were the children who were under the age of two at the time of survey. Children in cohort 3 would have been born between April 1969 and March 1970, (since the survey in Mansa was carried out in April 1972) For children in this cohort the age when their 'Road-to-Health' cards were issued seem to be well distributed throughout the three year period. Figure 23 page 304. None of the children in Mansa, who were over the age of three years, had been issued with a 'Road-to-Health' card in the first three months of life. Prior to 1969 the clinic in Mansa was in its infancy and it cannot be expected that cards would be issued to all children early in life.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR ROAD TO HEALTH CARDS WERE ISSUED

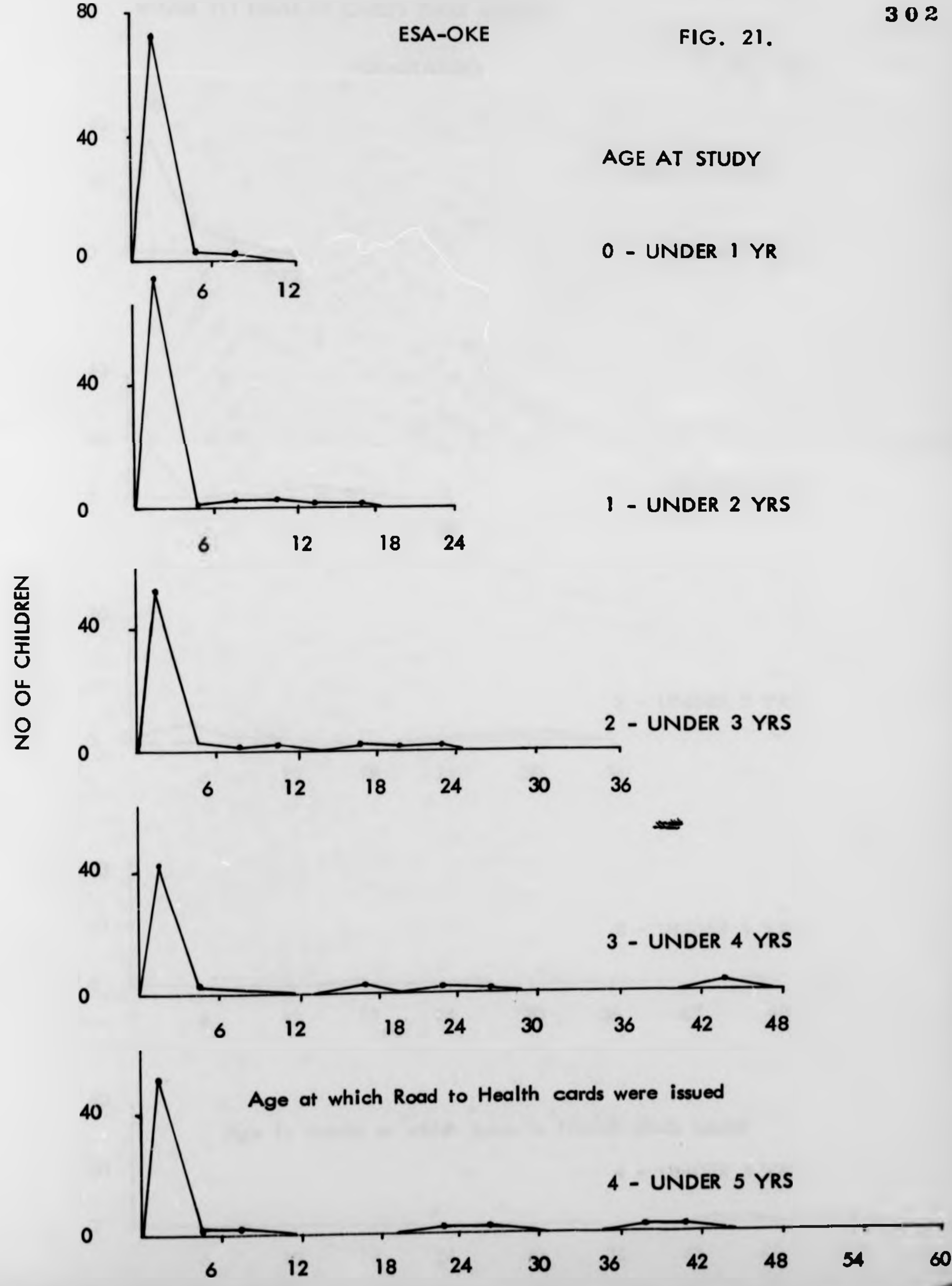
ILESHA

FIG. 20.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR ROAD TO HEALTH CARDS WERE ISSUED

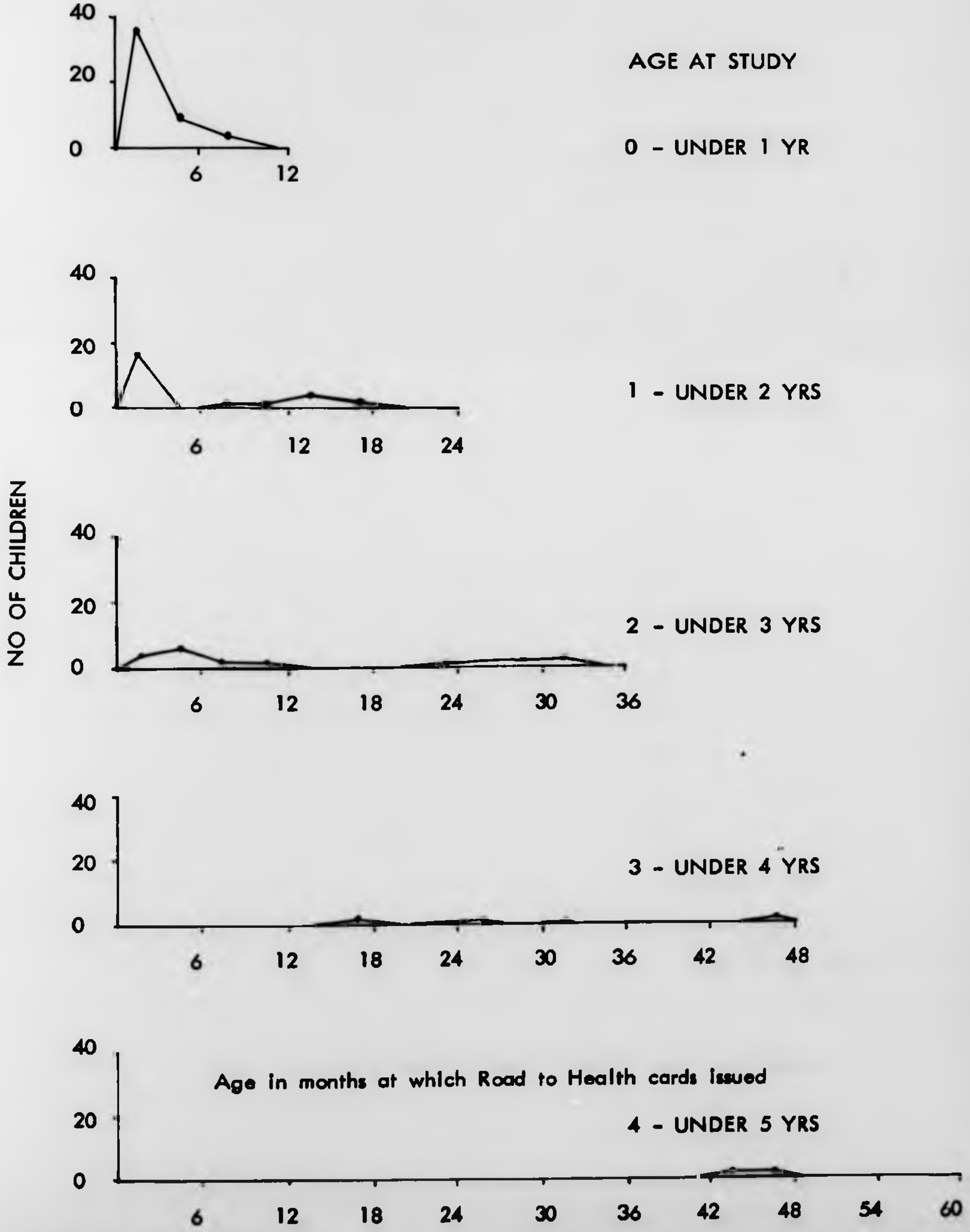
FIG. 21.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR ROAD TO HEALTH CARDS WERE ISSUED

NAMITAMBO

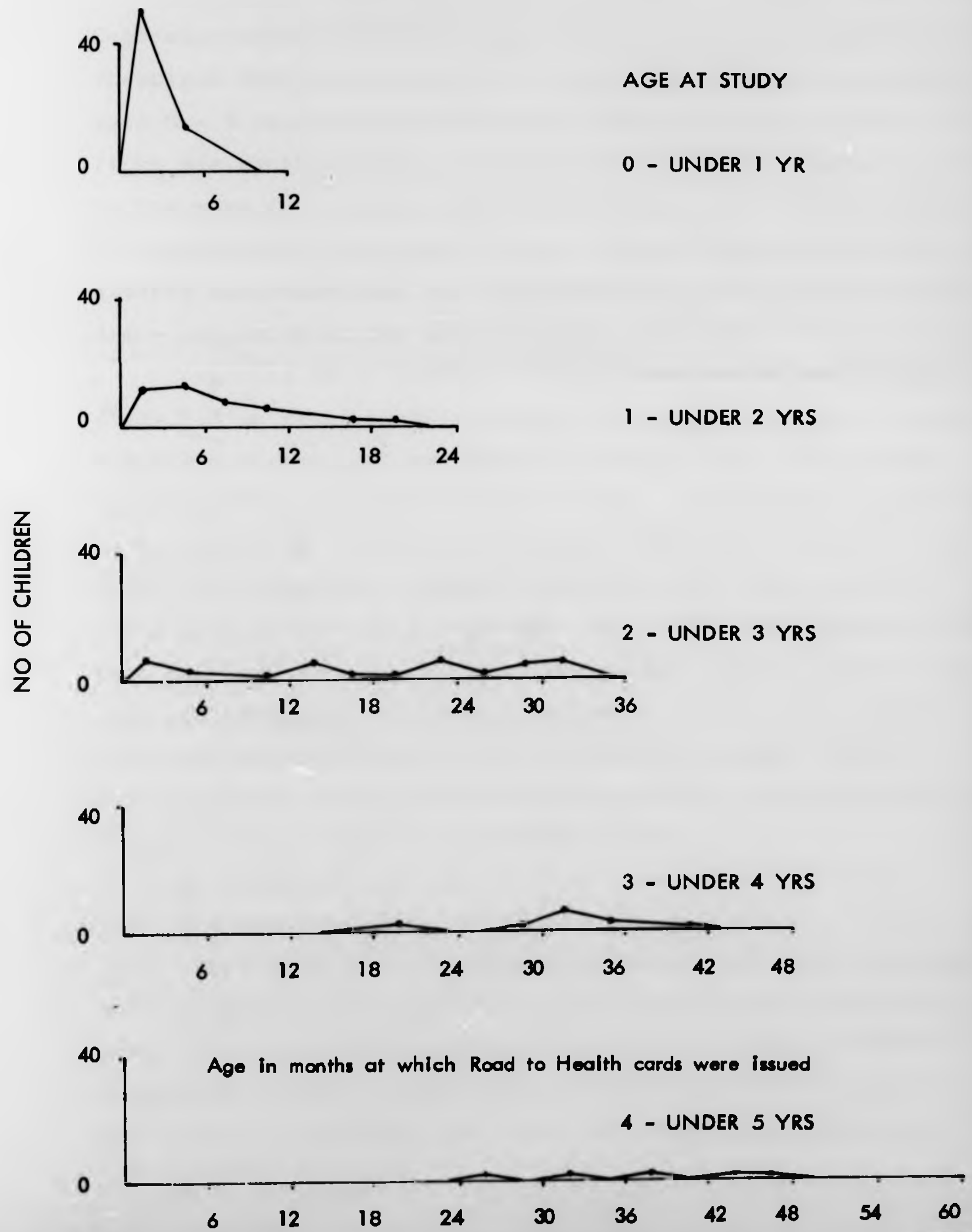
FIG. 22.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT WHICH THEIR ROAD TO HEALTH CARDS WERE ISSUED

MANSA

FIG. 23.



In a study carried out in Kenya between January 1966 and September 1968 SCHOFIELD et al (1971) it was shown that in the Thembigwa Sublocation, out of a population of 2,835 children aged 0 - 5 years, 25% of them were brought to the clinic in the first six months of life, 8.5% in the second six months and 4% in the next four years. It must be noted that no part of the Sublocation was more than 2.6 kms from the health centre and the authors concluded that the attendance was low in spite of the close proximity of the clinic to the dwellings.

Comparing these figures with the results of the present study, it is noted that in Ilesha, of the 434 children seen in the field survey, 251 or 57.8% were seen in the first three months of life. In Esa Oke 305 of the 405 children, i.e. 75.3% in Namitambo 58 of 261 children, i.e. 22% and in Mansa 71 out of 314 children, i.e. 22.6% were seen at the clinic in the first three months of life. This figure does not, however, take into account those clinic attenders whose 'Road-to-Health' cards were not available on the day of survey but who also may have been seen at the clinic in the first three months of life. The results in Mansa and Namitambo are seen to be fairly similar to the results found in the Kenyan study.

In Ilesha and Esa Oke it seems likely that the mothers were encouraged to bring their children to the clinic early in life. These clinics have been in existence for over ten years and it seems likely that this factor has played an important part in making known to the local people the clinic policies related to the age at which the children should be brought to the clinic. WOLGEMUTH (1972) in her study in Lusaka found that in clinics that had opened for the first time, more older children were brought to them. She concluded that it was possible that the mothers were hesitant to expose younger children to the uncertainities of a new clinic, and that it was also possible that the younger children were too weak, malnourished, or ill and could not be easily carried a long distance to the clinic. However, the newer clinics in the present study, namely Namitambo and Mansa were in existence for over two years, at least, and as such cannot be directly compared with the clinics discussed by Wolgemuth.

From a simple field survey it has thus been possible to establish the proportion of children who were issued with a 'Road to Health' card very early in life, i.e. within the first three months of life. It is important to stress to the mother the need for bringing the children at an early age to the clinic. It is by this means that the clinic staff could ensure that the child receives all its necessary immunisations, and also that mothers receive nutrition and health education at the right time. For example the importance of breast feeding is best discussed at a time when the mother is breast feeding the child.

(iv) Immunisation.

Another activity of the clinic which could be assessed by a field survey is immunisation. Availability of vaccines and the policy regarding age at which immunisations are given could be deduced from a field survey carried out to extract this information from the home based 'Road-to-Health' cards.

Widespread use of effective vaccines has become probably the most important contemporary practise of preventive medicine. The recent increase in activity in vaccine research and development has greatly enhanced the immunisation programmes. DULL (1971) stated "It was 175 years ago that Edward Jenner undertook his historic work on smallpox prophylaxis that leads now to the promise of worldwide eradication of smallpox. It was almost a century ago that Louise Pasteur demonstrated a vaccine for post-exposure treatment of rabies, a concept still employed today. But in spite of these two monumental discoveries of important antigens, most of the vaccines now in routine use have become available only since the early to mid-twentieth century. Within the last decade alone, four effective live attenuated virus vaccines against poliomyelitis, measles, mumps and rubella have been put to use".

The use of vaccines for the prevention of disease is widespread in tropical Africa. The optimum age at immunisation for different vaccines has been the subject of much research. In establishing the optimum age at immunisation the following points should be considered.

(1) At what age would an unvaccinated child be most susceptible to the disease?

(2) At what age would the effects of the disease be most severe?

(3) Up to what age would maternal antibodies and antibodies in breast milk interfere with antibody formation in the child?

(4) At what age would a child be most likely to come in contact with the medical services in order to be able to receive vaccination?

ROBBINS (1971) speaking on immunisation of newborns and infants stated "There are several reasons why it would be desirable to vaccinate the neonate. First, certain infections are particularly lethal for the young infant. Pertussis, for example, is a serious and not frequently fatal disease during the first years of life; it is a less virulent disease in later years. Secondly, the newborn infant has not had an opportunity to acquire infection with agents that might interfere with a live vaccine. This is applicable especially in poliomyelitis. Finally, the time of birth may be one of the few times in an individual's life when he is likely to be in contact with the health system and available to be immunised. One would like to capitalise upon such opportunities". Robbins, however, goes on to stress that certain features such as maternal antibodies, antibodies in breast milk, and 'immunological immaturity' in the infant might, in the case of certain vaccines, make it more suitable to be given later in life. For example he states that the measles vaccination should not be performed in a highly immune population until the age of 9 - 12 months, as parental administration of live virus vaccines such as measles, are totally ineffective in the presence of even minimal levels of antibody, as the vaccine virus is promptly neutralised and no multiplication occurs.

Cost of vaccination is another subject that has attracted attention. DULL (1971) states "there is considerable cost associated with disease. There is, of course, considerable cost associated with its control and prevention. Uncontrolled disease has easily recognised costs. They are sickness and death. Economists list them as 'direct' and 'indirect' costs referring to monies spent for the medical care of the sick and to the lost wages during sickness and unfulfilled productivity due to premature death. As vaccines for controlling and preventing disease become available, the inherent cost of buying and using them is justified with saving of medical care and costs and increases productivity of healthy people. To the extent that sickness is prevented and lives saved, vaccination programme costs seem insignificant".

In the areas of investigation in the present study immunisation was carried out routinely at the Under Fives Clinics. The details as regards each individual type of immunisation would be dealt with in the next few pages.

BCG VACCINATION

Protection.

Since the take rate of smallpox vaccine or the rate of serological conversion of measles vaccine are known, it is possible to calculate the rate of immunity in the population that may be expected from a given vaccination coverage. The situation with regards BCG is less clear, since the natural or induced immunity against tuberculosis cannot be taken for granted. The tuberculin test is merely evidence of the immunisation process, and does not indicate levels of immunity. PAVIOT (1971).

The protection provided by BCG in the community can best be assessed by a longitudinal survey such as The Medical Research Council's BCG trial carried out in 1956 where protection was estimated as 80%. SPRINGETT (1965)

In all four study areas the clinic policy was to immunise children against tuberculosis (by giving a single dose of BCG) at birth or at the first visit to the clinic.

Information on BCG vaccination was obtained from the 'Road-to-Health' card and/or from observing the deltoid region of the upper limb for vaccination scars. Information from one or other of the above sources was considered as evidence of having had BCG. It was not possible to establish the date when the vaccination was given if the child did not have a 'Road-to-Health' card, even if he or she had a scar.

<u>BCG Vaccination and Population coverage</u>.

74%, 66%,25% and 47% of children respectively in Ilesha, Esa Oke, Namitambo and Mansa had received a BCG vaccination (Table65). The high coverage in the two West African areas could partly be due again to the fact that the clinics in Ilesha and Esa Oke have been in operation for a longer period of time. SCHOFIELD et al (1971) reported a 9.7% population coverage for BCG vaccination in the pre-school population in a rural area in Kenya. This area had a static Maternal and Child Health Clinic. They also report a 23.1% BCG vaccination coverage for another area of Kenya, served by mobile fortnightly Maternal and Child Health Clinics. The authors compare the immunisation coverage achieved by a static clinic (former) with a mobile clinic (latter). In the areas of study in the present survey all immunisations were carried out by static clinics. The coverage achieved in Ilesha and Esa Oke is exceptionally high in comparison with the Kenyan coverage. In Namitambo, which had a 25% coverage for BCG and was the lowest for the four areas of the present study, yet this coverage is in excess of that achieved by the mobile team in Kenya. However, it must be kept in mind that the Kenyan mobile team carried out immunisations once a fortnight while the immunisations were available at the Namitambo clinic once a week.

CUNNINGHAM (1969) studied the immunisation records of 982 children attending the Under Fives Clinic in Imesi in the Western region of Nigeria. He found that 90.8% of these children had received BCG. However, the children studied by him, were those who were being followed up closely by the clinic staff as part of a longitudinal study, and as such this population could not be considered typical.

Age at BCG vaccination.

Children seen in the field survey are again divided into age cohorts (see page 298) since all clinics endeavoured to give children BCG early in life. It could be expected that the peak age when maximum number of children received their BCG would be in the first three months of life. In Ilesha and Esa Oke it is seen that for children in each age group who have had BCG vaccination, a large proportion of these children received their vaccination in the first three months of life (Figures 24 - 27)

For Namitambo and Mansa, however, even though it would have been possible for the children to have received their BCG vaccination soon after birth for example at the maternity unit, yet those children born prior to the starting of the Under Fives Clinic in these areas would not have had a 'Road-to-Health' card issued early enough, to have the date of BCG vaccination noted on the cards.

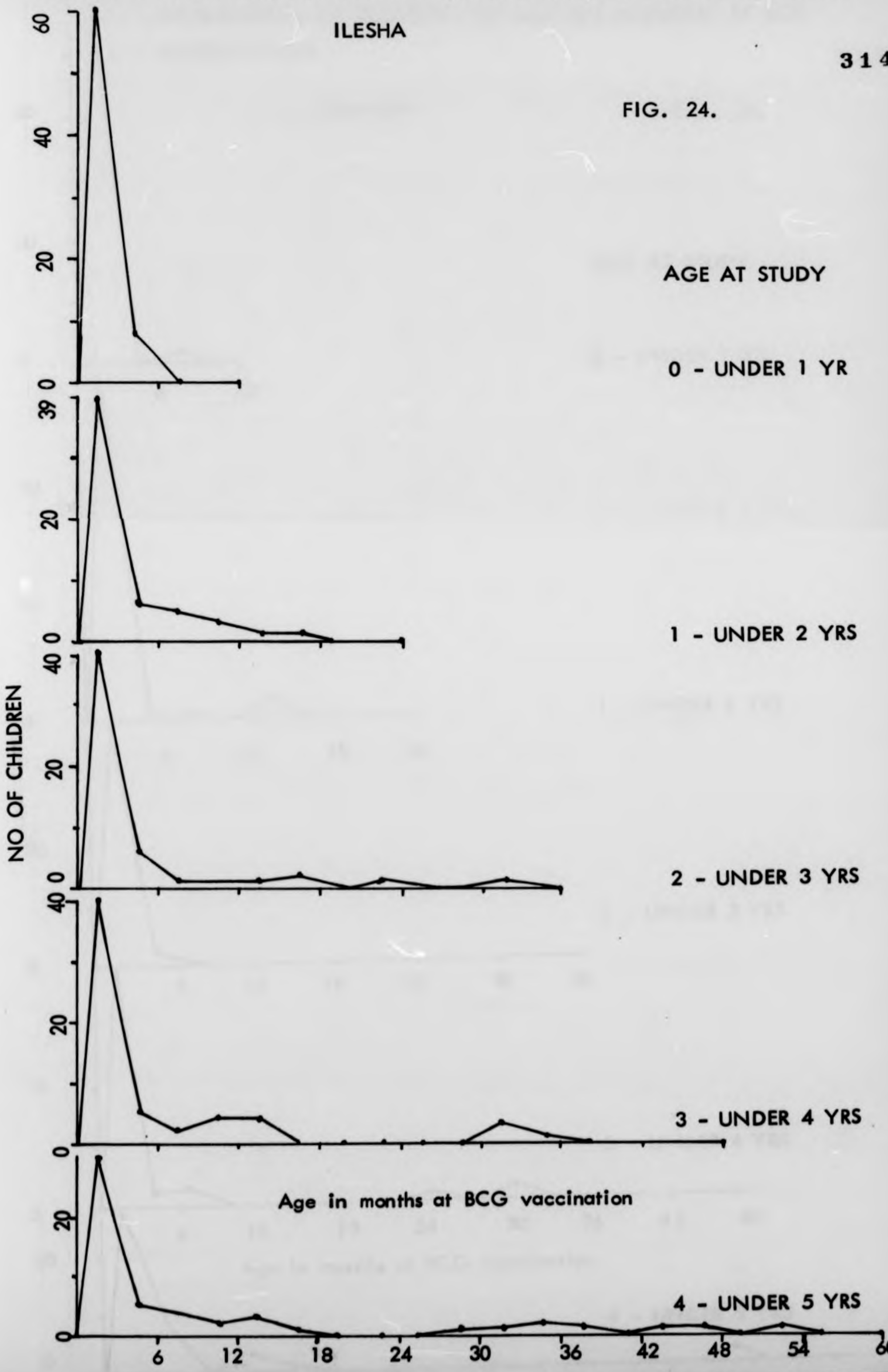
Page 318 shows the percentage of children in each cohort who had received their BCG vaccination in the first three months of life. (For those children for whom the age at BCG vaccination was known). Of these children it is seen that for children in the first two cohorts, i.e. for children under the age of two years in all areas a high percentage of children received their BCG in the first three months of life. For example in the 0 -

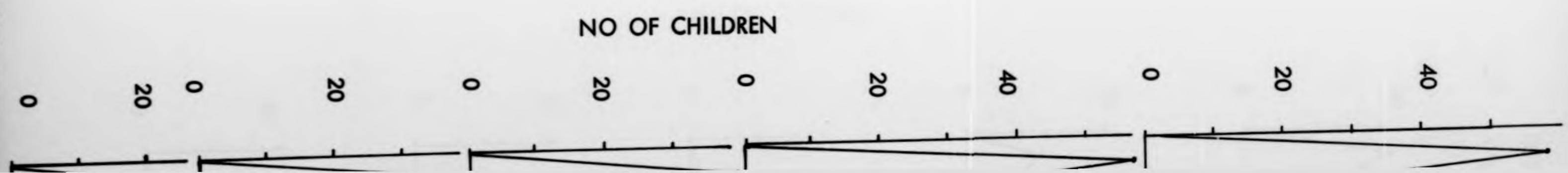
under 1 year cohorts 93.8% in Ilesha, 96.6% in Esa Oke, 72.4% in Namitambo and 71% in Mansa of the children (whose age at BCG was known) had received their BCG within the first three months of life. However, for the 4 - under 5 years cohorts the results for the areas differ considerably. In Ilesha 56.6% and in Esa Oke 64.2% children (whose age at BCG was known) received their BCG within the first three months of life. In Namitambo none of the children in this cohort who had received BCG had the date of vaccination known. A similar situation was seen in Mansa. This situation arose as a result of the clinics in these areas being opened after these cohorts of children were born.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION

ILESHA

FIG. 24.



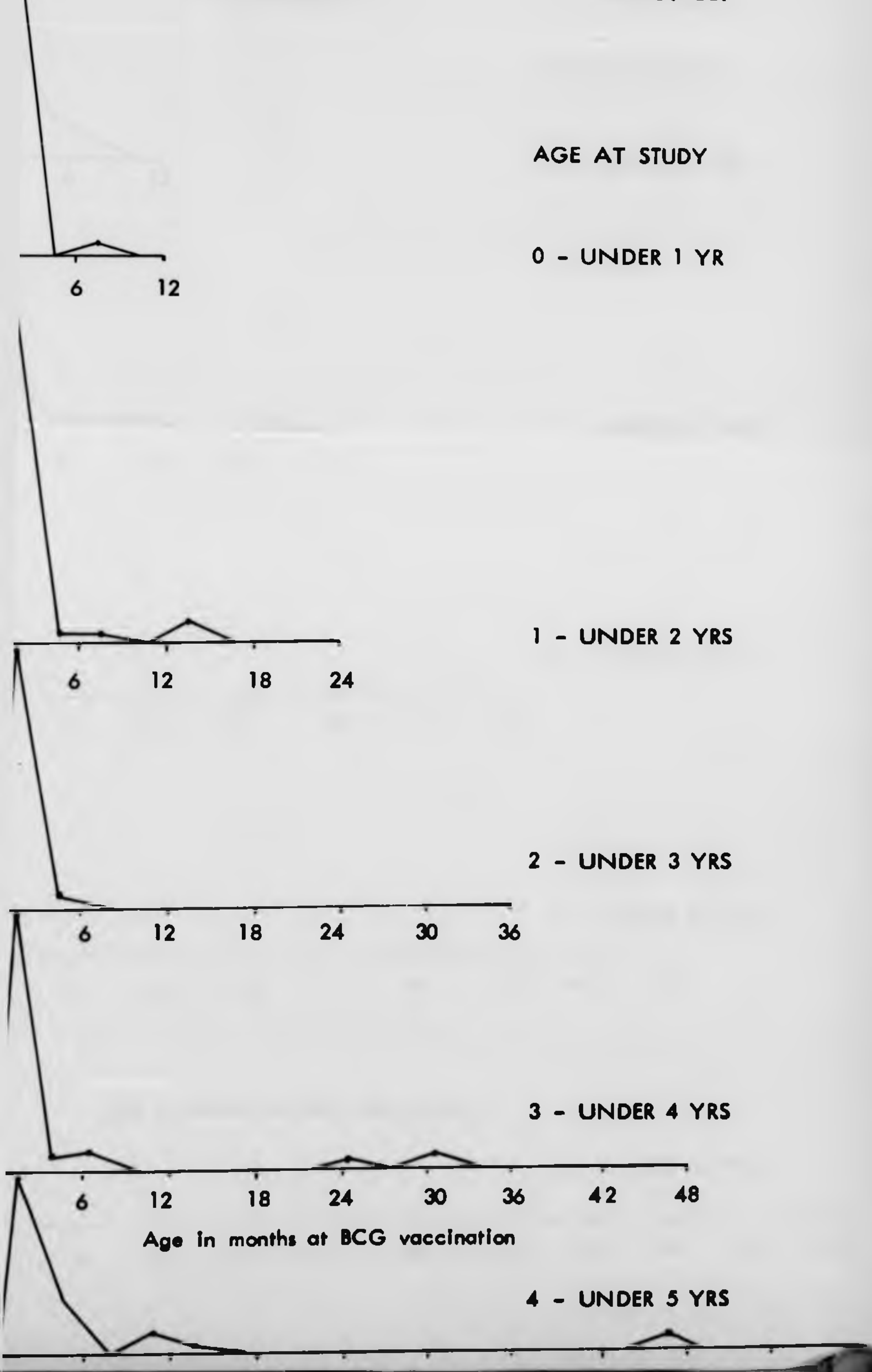


NO OF CHILDREN

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION

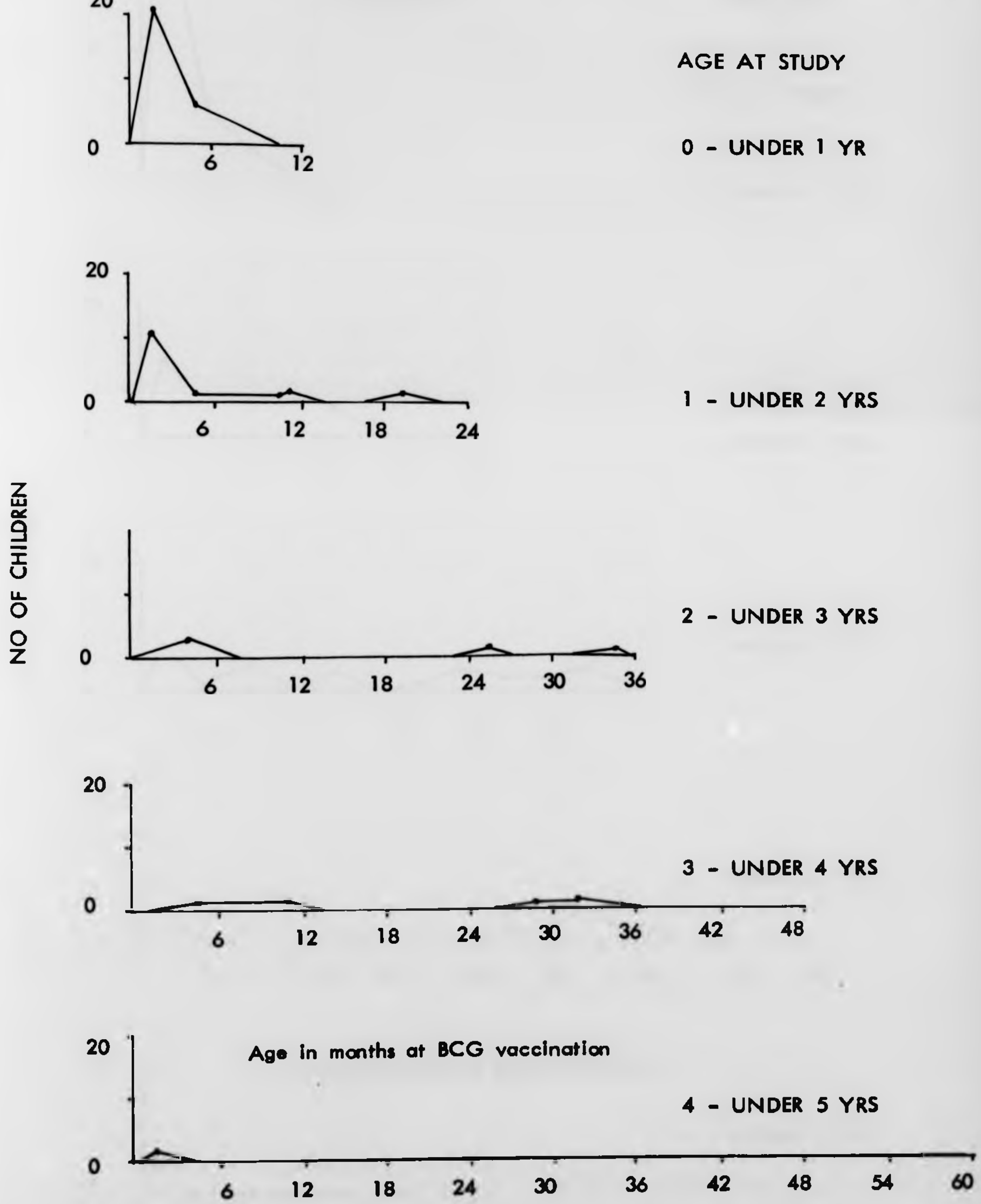
ESA-OKE

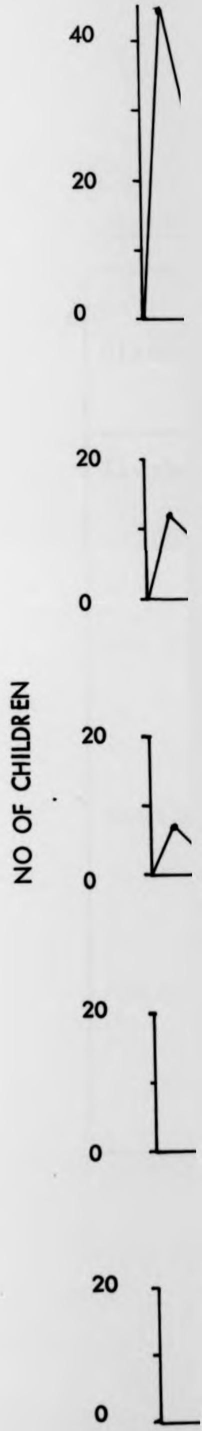
FIG. 25.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION

FIG. 26.





40
20
0
20
0
NO OF CHILDREN
20
0
20
0
20
0

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT BCG VACCINATION

MANSA

FIG. 27.

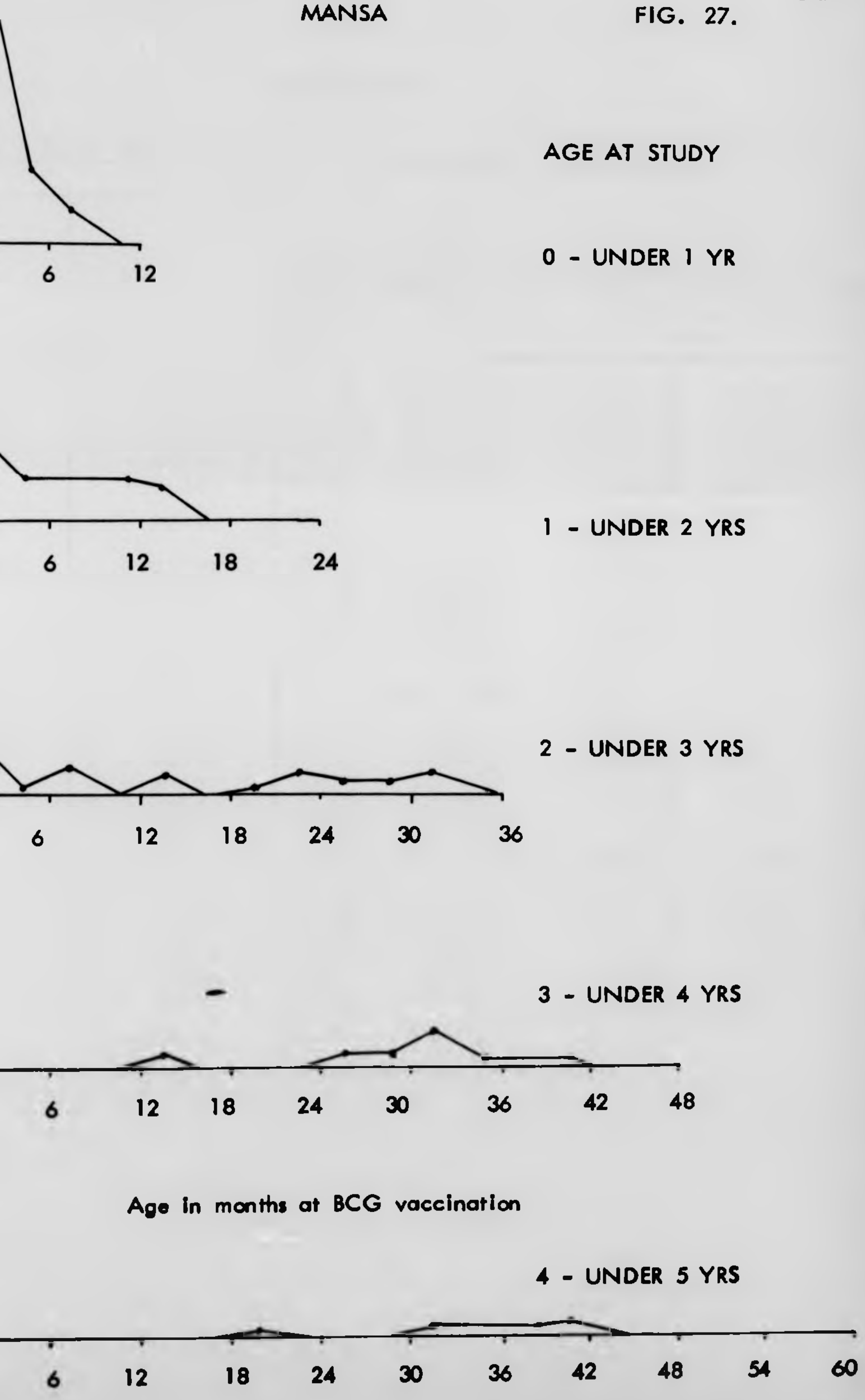


TABLE 102.

DISTRIBUTION OF CHILDREN BY AGE, BY AGE AT BCG, AND BY AREA.

Clinic	Age	% given BCG in 1st 3 months of life. Total number children at each age.	% given BCG in 1st 3 months of life Children whose (age at BCG vaccination was known)
Ilesha	0 - under 1	57.7% (60/104)	93.8% (60/64)
	1 - under 2	47.0% (40/85)	67.8% (40/59)
	2 - under 3	47.5% (39/82)	75.0% (39/52)
	3 - under 4	52.6% (40/76)	67.7% (40/59)
	4 - under 5	41.1% (30/73)	56.6% (30/53)
	All ages	49.8% (209/420)	72.8% (209/287)
Esa Oke	0 - under 1	71.6% (51/81)	96.6% (58/60)
	1 - under 2	58.0% (56/94)	91.8% (56/61)
	2 - under 3	52.7% (39/74)	88.6% (39/44)
	3 - under 4	52.6% (40/76)	83.3% (40/48)
	4 - under 5	40.3% (27/67)	64.2% (27/42)
	All ages	56.0% (220/392)	86.3% (220/255)
Namitambo	0 - under 1	21.2% (21/90)	72.4% (21/29)
	1 - under 2	17.2% (11/64)	73.3% (11/15)
	2 - under 3	6.1% (1/49)	16.6% (1/6)
	3 - under 4	0.0% (0/35)	0.0% (00/5)
	4 - under 5	0.0% (0/21)	0.0% (0/0)
	All ages	12.7% (33/259)	60.0% (33/55)
Mansa	0 - under 1	45.8% (44/96)	71.0% (44/62)
	1 - under 2	17.6% (12/68)	34.3% (12/35)
	2 - under 3	10.7% (7/65)	25.9% (7/27)
	3 - under 4	0.0% (0/49)	0.0% (0/14)
	4 - under 5	0.0% (0/34)	0.0% (0/6)
	All ages	20.2% (63/312)	43.8% (63/144)

SMALLPOX VACCINATION

Since the advent of the global smallpox eradication programme in 1967, the problem of smallpox in Africa has changed dramatically. Only five years ago smallpox was found in most African countries south of the Sahara and, in some, the rates were the highest recorded anywhere in the world. In Africa today, major endemic foci persist only in two countries - Sudan and Ethiopia.

Provision of adequate quantities of fully potent vaccine was of prime importance in the smallpox eradication programme. HENDERSON (1971) reported "it was a shock to us to find in 1967 that no more than 10% of all smallpox vaccines manufactured and in use in Africa were freeze dried vaccine which met WHO recommended standards."

Throughout Africa now, fully potent freeze-dried smallpox vaccine is in use with the result that when vaccine is administered to 100 persons, virtually all are, in fact vaccinated as contrasted to perhaps 10 per 100 or less only five years ago. The introduction of the jet injector and later the bifurcated needle constituted a significant advance in vaccine administration. With these devices there was a saving of 50 per 100 or more vaccine consumption, take rates were significantly higher, than with the older scratch techniques, and vaccinations were able to be performed at a much faster rate of speed thus saving on personnel and expense.

Smallpox vaccination population coverage.

Information on smallpox vaccination was obtained from the 'Road-to-Health' Cards and/or by observing the deltoid region of the upper arm for scars. By this means it was established that 55.8% children in Ilesha, 34.6% children in Esa Oke 42.1% children in Namitambo and 78.7% children in Mansa, who were seen in the survey had been given smallpox vaccinations. Table 103a. However, it must be remembered that smallpox vaccination was usually given after the first three months of life, hence 27, 25, 21 and 23 children in Ilesha, Esa Oke, Namitambo and Mansa respectively were under the age of three months, at time of survey and should be excluded as being not eligible (because of age).

TABLE 103(a)

DISTRIBUTION OF CHILDREN BY AGE BY SMALLPOX VACCINATION BY AREA.

Age	ILESHA		ESA OKE		NAMITAMBO		MANSA	
	SPV given	SPV not given	SPV given	SPV not given	SPV given	SPV not given	SPV given	SPV not given
Under 3 months	4.0% (1)	96.0% (26)	0.0% (0)	100.0% (25)	5.0% (1)	95.0% (20)	43.0% (9)	57.0% (14)
Over 3 months	59.2% (241)	40.8% (166)	36.8% (140)	63.2% (240)	45.4% (109)	54.6% (131)	81.8% (238)	18.2% (53)
All ages	55.8% (242)	44.2% (192)	34.6% (140)	65.4% (265)	42.1% (110)	57.9% (151)	78.7% (247)	21.3% (67)

If these "under age" children are excluded then the percentage coverage in respect of smallpox vaccination becomes 59.2% (241/407) for Ilesha, 36.8% (140/380) for Esa Oke, 45.4% (109/240) for Namitambo and 81.8% (238/291) for Mansa.

The clinics in Ilesha and Mansa provided immunisation daily while those in Namitambo and Esa Oke were able to immunise children only once a week. Therefore in the latter areas the opportunities for a mother to get her child immunised would be less. For example, if a child was ill on the day when immunisations are given, then in Namitambo and Esa Oke he or she would have to wait a whole week before it is possible to get immunisation again, whereas in Ilesha and Mansa the child could if fit be immunised on the next day.

In a study carried out by Cunningham (1969) in Imesi in Nigeria, it was reported that 90.2% of the children under the age of five had received smallpox vaccination. However, this study was carried out in a test village where a longitudinal study of children was in progress, and this guaranteed more frequent opportunity for vaccination , and could have also resulted in improved health education, whereby the population was more aware of the advantages of vaccination.

SCHOFIELD et al (1971) reported the results of an observational study, carried out in a community living at distances of 2.6 km or less from a Rural Health Centre in Kenya. The coverage for smallpox vaccination achieved here was 8.8%.

It seems quite clear that in this population the uptake of smallpox vaccination was highly unsatisfactory. Unfortunately the authors made no comment on the possible reasons for this.

THURAIUX, COOK AND MOFFAT (1971) reported an investigation of the vaccination status of the population of a rural area in Uganda carried out by the World Health Organisation in 1969, for smallpox and BCG.

Their findings are given in Table 103(b) for two sub counties served by a Young Child Clinic (Y.C.C.) and eight sub counties without Young Children Clinics.

TABLE 103(b)

Age group	Y.C.C. Sub counties		Non Y.C.C. Sub counties	
	BCG scars	SP scars	BCG scars	SP scars
0 - 1 year	72%	60%	59%	49%
1 - 4 years	79%	88%	58%	83%
0 - 4 years	77%	85%	58%	72%

In the non Y.C.C. Sub counties the immunisation was carried out by mobile clinics or as part of a mass campaign. (The arguments for and against both these types of immunisation programmes would be discussed later). However, it is worth noting that the percentage coverage achieved by the Young Child Clinics for smallpox and BCG vaccination is, for all ages greater than that achieved by the mobile/ and or mass campaigns.

AGE AT SMALLPOX VACCINATION.

In the areas of study the policy regarding the age at which smallpox vaccination should be given did not appear to be as rigid as for BCG vaccination. In Ilesha, Esa Oke THWAITES (1972) and Namitambo COLE KING (1972) it was the clinic policy to give the smallpox vaccination between the third and sixth month, preferably nearer the sixth month. This ruling arose as a result of the belief that the child had an appreciable amount of maternal antibodies against smallpox until about the age of six months, after which the levels fell to a negligible amount. In Mansa, the author was unable to obtain information on clinic policy, it was not possible to establish a definite ruling regarding the ideal age for smallpox vaccination. However, in the field survey it was seen that some of those children for whom the date of smallpox vaccination was known the maximum number received it in the first three months of life. Figure 31 From the 'Road-to-Health' cards it was found that the majority of children in Ilesha received their smallpox vaccination between the ages of three and six months for all age cohorts except for the cohort of children over the age of one year but under two years, at the time of survey. Here the peak age of smallpox vaccination is seen to be shifted to the right (Figure 28), i.e. the peak is seen between nine and twelve months. This could have been due to a temporary change in clinic policy regarding the ideal age for smallpox vaccination, In Ilesha a trial may have been carried out at that particular time to see what changes might result by giving the smallpox vaccination at a slightly later age, or it could be that in that particular period a shortage or non availability of vaccines, or other equipment such as bifurcated needles may have occurred which resulted in a complete or partial cessation of smallpox vaccination in the area. This difference in the peak ages at which smallpox vaccination was given was only discovered when the results of the field survey were analysed, i.e. after the author had left Ilesha. It was thus not possible to establish the real reason for this difference in peak age for smallpox vaccination. In the next age cohort, i.e. children under four years of age but over three years at the time of the survey, a similar shift in the peak is seen. (Figure 28). However, here of the seventy six children in this age cohort twelve received their smallpox vaccination between the age of six and nine months and eleven received their vaccination between the age of three and six months.

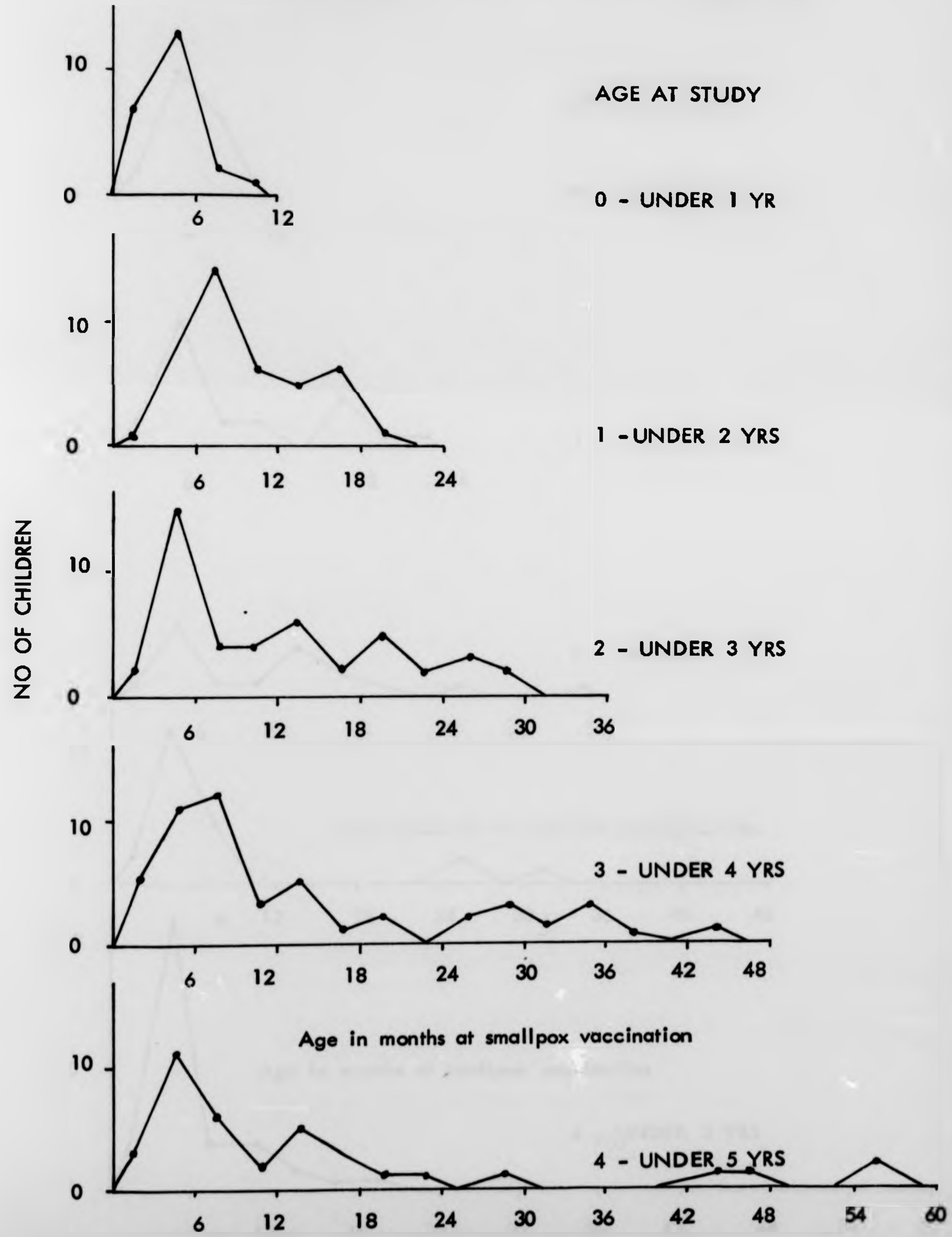
Throughout the five year period under review, i.e. February 1967 to February 1972, it is seen that the peak age for smallpox vaccination for Esa Oke was between the ages of three and six months. (Figure 29). However in cohorts 2 and 3, i.e. children born in February 1969 and February 1970, a number of children received their smallpox vaccination later in life, as shown by the smaller peaks at between the ages of twelve and eighteen months in cohort 3, and at eighteen months in cohort 2.

It must be remembered that due to the lack of refrigeration facilities at the Esa Oke clinic, immunisations are carried out once a week only by a visiting nurse/sister who travels from Ilesha weekly with the vaccine. Thus at Esa Oke immunisations are carried out four times a month only.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT SMALLPOX VACCINATION

ILESHA

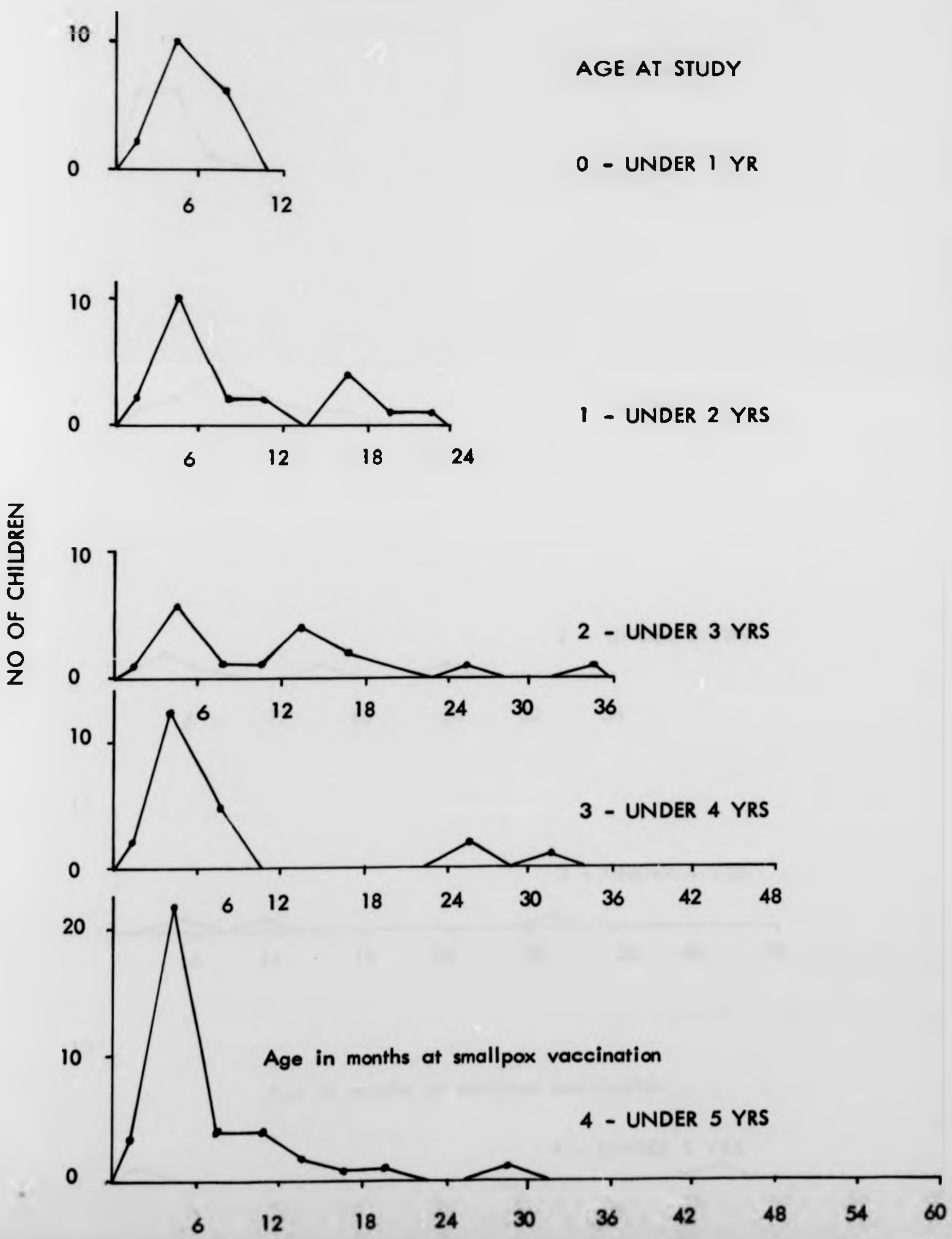
FIG. 28.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT SMALLPOX VACCINATION

ESA–OKE

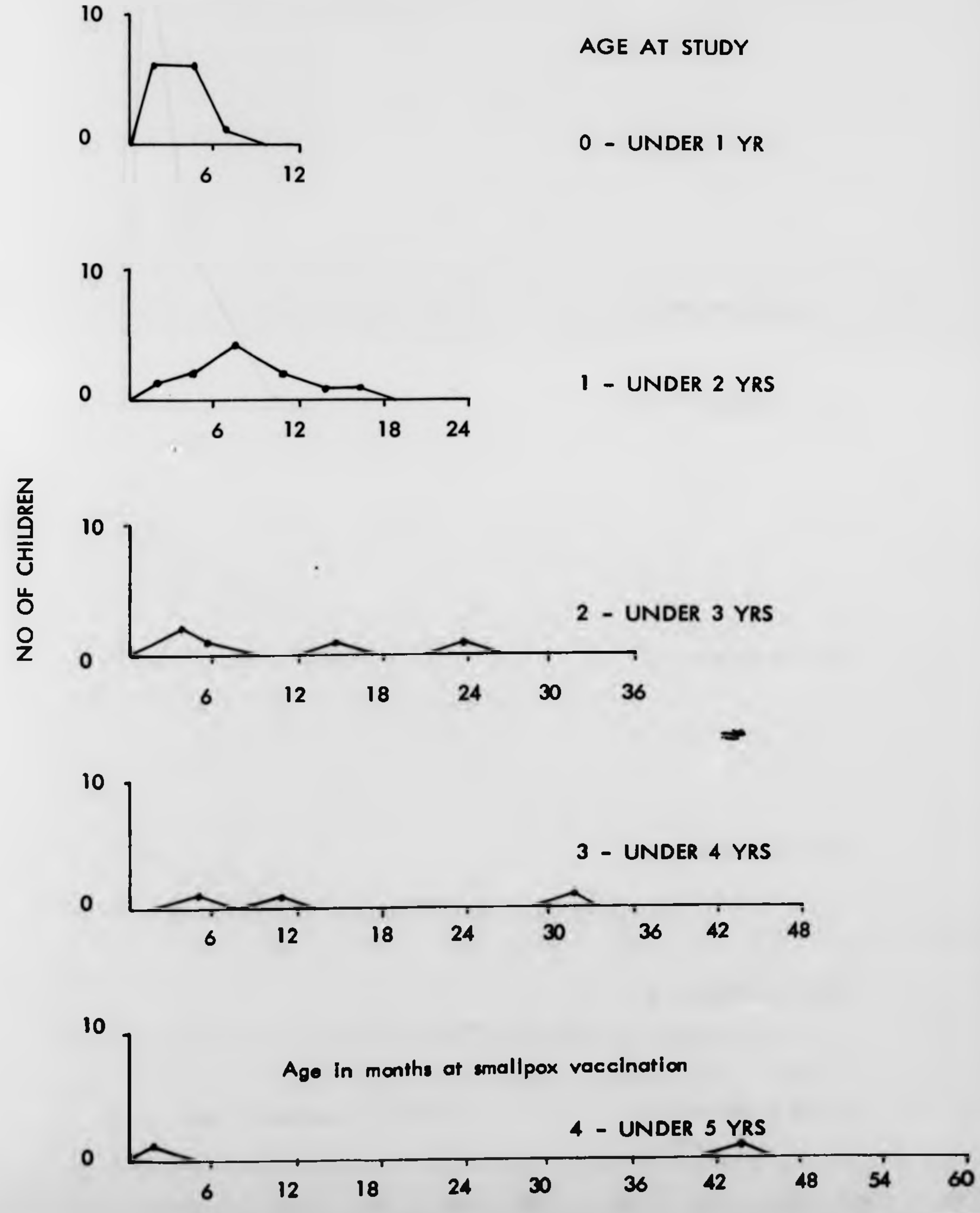
FIG. 29.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT SMALLPOX VACCINATION

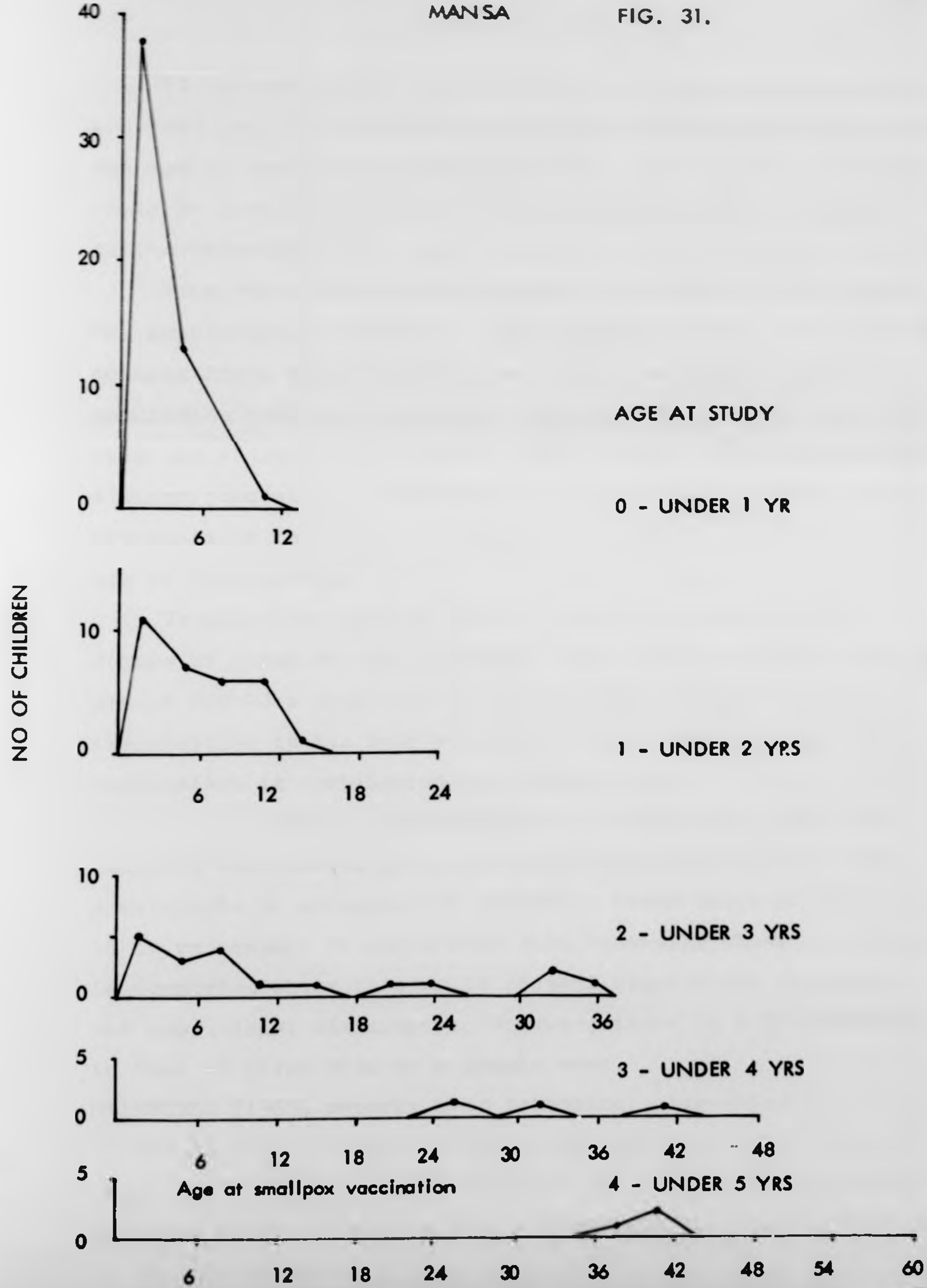
NAMITAMBO

FIG. 30.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT SMALLPOX VACCINATION

MANSA FIG. 31.



It was pointed out earlier that in Ilesha also, in cohort 2, a second peak for smallpox vaccination was seen to occur between the age of twelve and eighteen months. The Esa Oke situation could be a reflection of the vaccine availability at Ilesha during this time.

From this type of field survey it was possible to assess the population at risk (i.e. the population that is at risk of contracting a particular disease unless suitably immunised), the population that has received a specified immunisation and the peak age at which a particular immunisation was carried out in a known population. However, it is not always possible to offer explanations for the differences that might be seen in the peak age of vaccination.

Vaccinations against BCG and smallpox confer a high degree of immunity with a single dose of the vaccine. With the use of Pedo-Jet injectors and other modern techniques of immunisation it has been possible to give BCG and smallpox vaccination in combination as a single dose.
LIN AND HYG (1965) substantiated the evidence that BCG and smallpox vaccination given simultaneously does not have any synergistic or antagonistic effects. Under these circumstances it is reasonable to administer simultaneously these two vaccines in countries where this would present significant financial and operational advantages. However, there is a disadvantage in that it gives rise to a single scar.
STANFIELD (1967a) reports that tattooing, pigmenting the vaccine or the issuing of rings or discs have all been suggested as a means of identifying those children who have received BCG and smallpox vaccinations together. Stanfield also quotes Heyworth

(1967 personal communication) that "for instance in one trial the site of combined BCG and smallpox vaccination is being replaced under the angle of the left scapula."

However, the use of 'Road-to-Health' cards should make this unnecessary. Not only would the card carry information on the immunisation given but would also contain information on the dates of vaccination and re vaccination. A field survey similar to the present one, of the home based records, would give an immediate indication of the population that has received the vaccination at any given time. The practise of giving smallpox and BCG vaccination simultaneously was not being used in the areas of the present study. For the reasons given above it might well be considered useful to introduce such a regime.

MEASLES VACCINATION.

Protection.

Attenuated measles vaccine is among the most reliable and effective of all known live vaccines AGBOTON AND REY (1971). They suggest that protection produced by measles vaccine could be as high as 95% in experimental studies but that in mass campaignssero-conversion of 85% could be expected. Live vaccine is said to be ineffective in children under the age of six months because of the presence of circulating maternal anti-bodies, and only moderately effective between the ages of six and nine months. KRUGMAN AND GILES (1970) reported on 80% sero-conversion in children between the ages of nine and twelve months and a 97% sero conversion in children over the age of twelve months. However, in tropical Africa where measles is a serious illness among children it is best to give the vaccine rather earlier in life, i.e. between the ages of nine and twelve months, and risk a lower rate sero conversion, than to withhold vaccination till a later age to ensure higher sero conversion, but risk the child developing the disease, which might prove fatal. Another problem encountered with the measles vaccine is its lability. In spite of the freeze drying, measles vaccine is very sensitive to heat and light. It is stable at four degrees centigrade for up to a year, but at forty five degrees centigrade the vaccine is inactivated in two to three days. This may at times account for the relative failure of vaccination campaigns against measles to induce protection.

Measles vaccine is expensive, and the cost of administering this vaccine is estimated at 80 United States cents per susceptible individual. FOSTER (1971). However MORLEY (1971a) shows that a wide variation in the price of measles vaccine is encountered. He reports that prices ranging from United States $1.07 to 0.32 cents were quoted, for a 50 dose phial of measles vaccine, and stresses that the lowest of these prices was offered by a large and reputable international drug company.

Ilesha and Mansa have the greatest proportion of children immunised against measles. This could be due, as in the case of BCG and smallpox, to the availability of vaccinations daily at these clinics. In contrast in Namitambo and Esa Oke immunisations were carried out once a week only.

The first measles vaccine used in African countries was given in Imesi (a village twenty five miles from Ilesha) in 1960, and Ilesha was the subject of many vaccine trials and as such the people of Ilesha have a long experience of vaccination in the area MORLEY (1971 b). The cost and the poor keeping quality of the measles vaccine could also account in part for the overall lower immunisation against measles in all areas.

In a community where measles is epidemic or endemic, an attempt must be made to intervene, in order to reduce the incidence of the disease. Field surveys need to be carried out in order to find out the age at which the children in that population were most likely to contract the disease. On the basis of these findings it could be decided how early in life measles vaccination should be given, with the objective of immunising children at an earlier age than maximum risk of attack.

TABLE 104.

DISTRIBUTION OF CLINIC ATTENDERS (AGED ONE YEAR AND OVER WHO HAD THEIR ROAD-TO-HEALTH CARDS ON DAY OF SURVEY) BY MEASLES VACCINE BY AREA.

MEASLES VACCINATIONS	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
Given	46% (123)	33% (86)	10% (6)	44% (50)	38% (265)
Not given	54% (145)	67% (127)	90% (55)	56% (64)	62% (441)
TOTAL	100% (268)	100% (263)	100% (61)	100% (114)	100% (706)

Table 104.

46%, 33% 10% and 44% of clinic attenders aged one year and over (who had a 'Road-to-Health' card on day of survey) In Ilesha, Esa Oke, Namitambo and Mansa respectively, were seen to have been given measles vaccination. In these areas it was not possible to establish what proportion of susceptible children had not been immunised against measles. This was due to the following reasons.

(1) Lack of documented evidence of the child having suffered from measles. (Not all children suffering

from measles would be brought to the Under Fives Clinic. As such the 'Road-to-Health' card would not always contained this information).

(2) Inability of mother to recall if the child had suffered from measles.

Because of this the "uptake" of measles vaccination for all children over the age of one year who are clinic attenders has been considered. (However, some of these children may have acquired immunity already as a result of having suffered from measles).

AGE AT MEASLES VACCINATION.

In each cohort for the children in Ilesha, it is seen that the peak age at measles vaccination lay between the ages of six and nine months. A similar pattern emerges for the first 2 age cohorts in Esa Oke (Figure 33) i.e. for children up to the age of two years at the date of survey. In the 4th cohort, i.e. for children between the ages of three and under four years, the peak lies at between thirty and thirty six months. However, there were very few children in this cohort, in fact five, and it is unwise to generalise on the experiences of these five children, for all three to under four year olds in the area.

Again in Namitambo, the numbers are too small for any reliable conclusions to be drawn about peak age at vaccination.

Workers in many parts of tropical Africa have at one time or another resorted to mass vaccination campaigns. Being single dose vaccines, BCG, smallpox and measles are better suited for administering in this way, than vaccines such as diphtheria, polio and whooping cough which need to be given in two or three doses.

The mass campaign has the advantages of a vigorous attack on an obvious problem, and the utilisation of an elementary type of worker with the possibility of expansion and further training. STANFIELD (1967b) However, Stanfield goes on to say that, the disadvantages of this type of approach are many. A large number of the problems encountered in developing countries are not amenable to the "mass approach". For example malnutrition, gastro enteritis. Even when this approach is used for vaccination programmes they tend to be expensive and they may also produce an imbalance, and create a degree of dependence. Also those who conduct these campaigns may understand the techniques of disease control, while ignorant of local customs and attitudes.

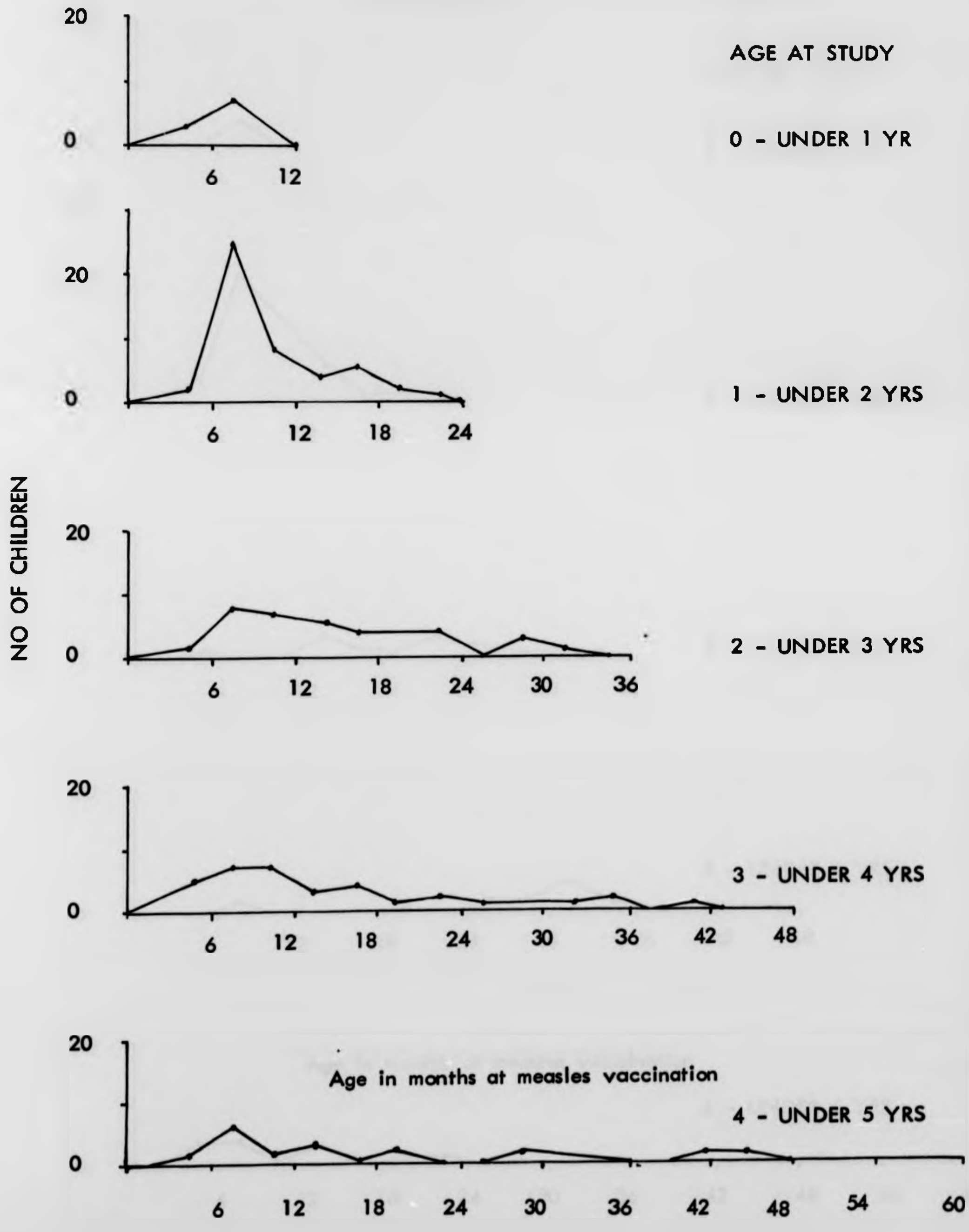
In the control of diseases such as measles and smallpox knowledge of local customs and attitudes could play an important role.

For these reasons, the recent trends have been towards more longer lasting and adaptable programmes for disease prevention and control. The Under Fives Clinics offer such a programme.

DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT MEASLES VACCINATION

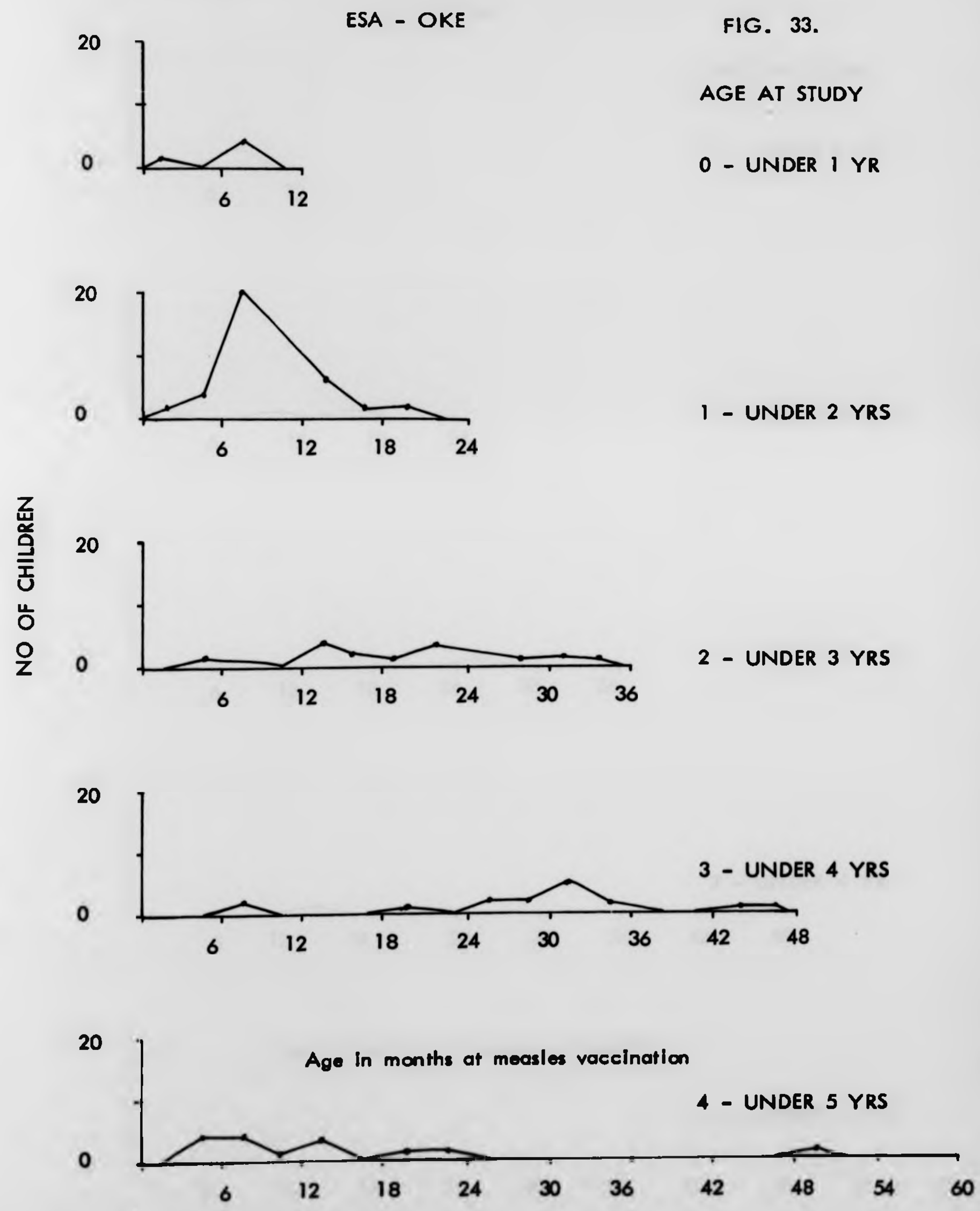
FIG. 32.

ILESHA



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT MEASLES VACCINATION

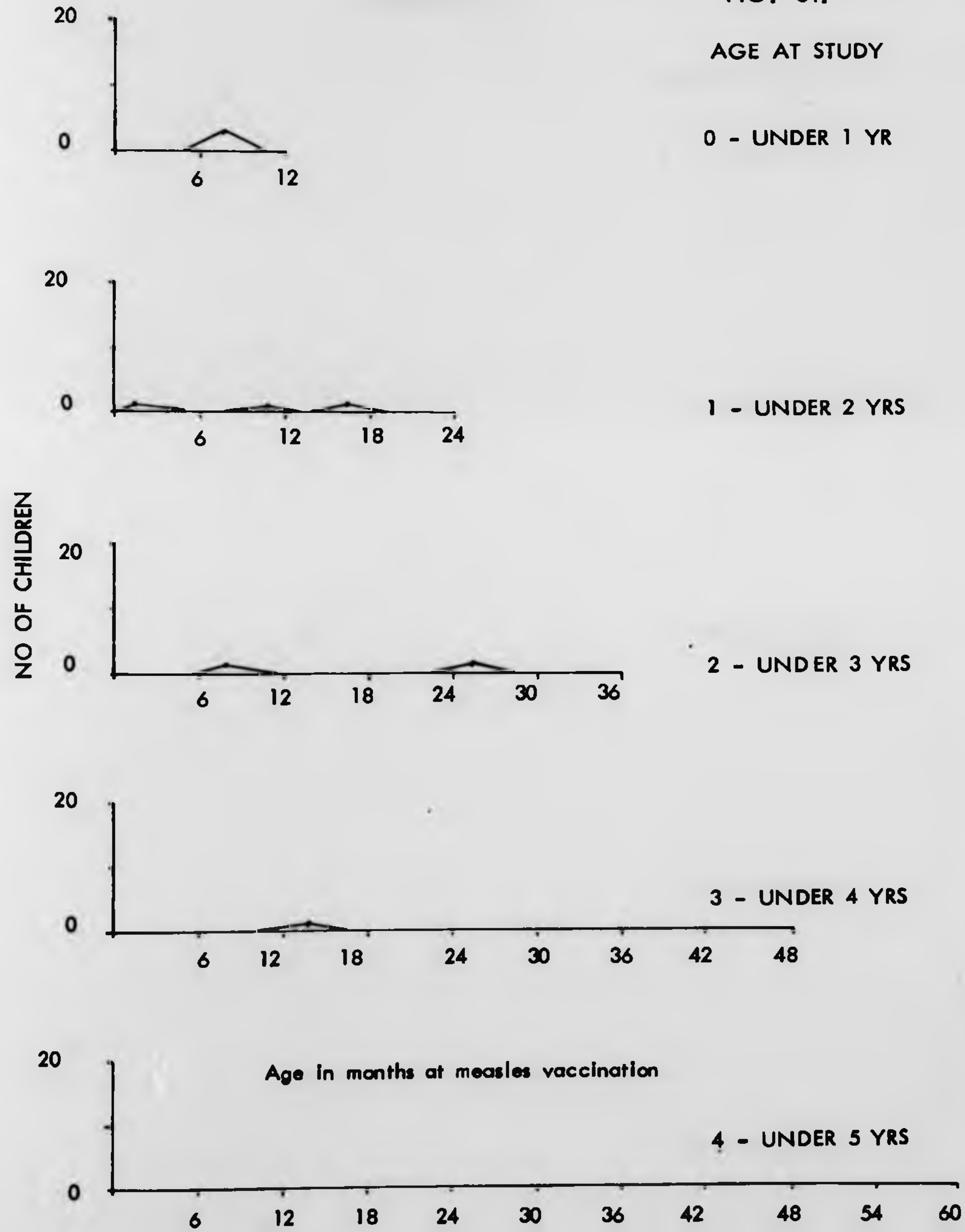
FIG. 33.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT MEASLES VACCINATION

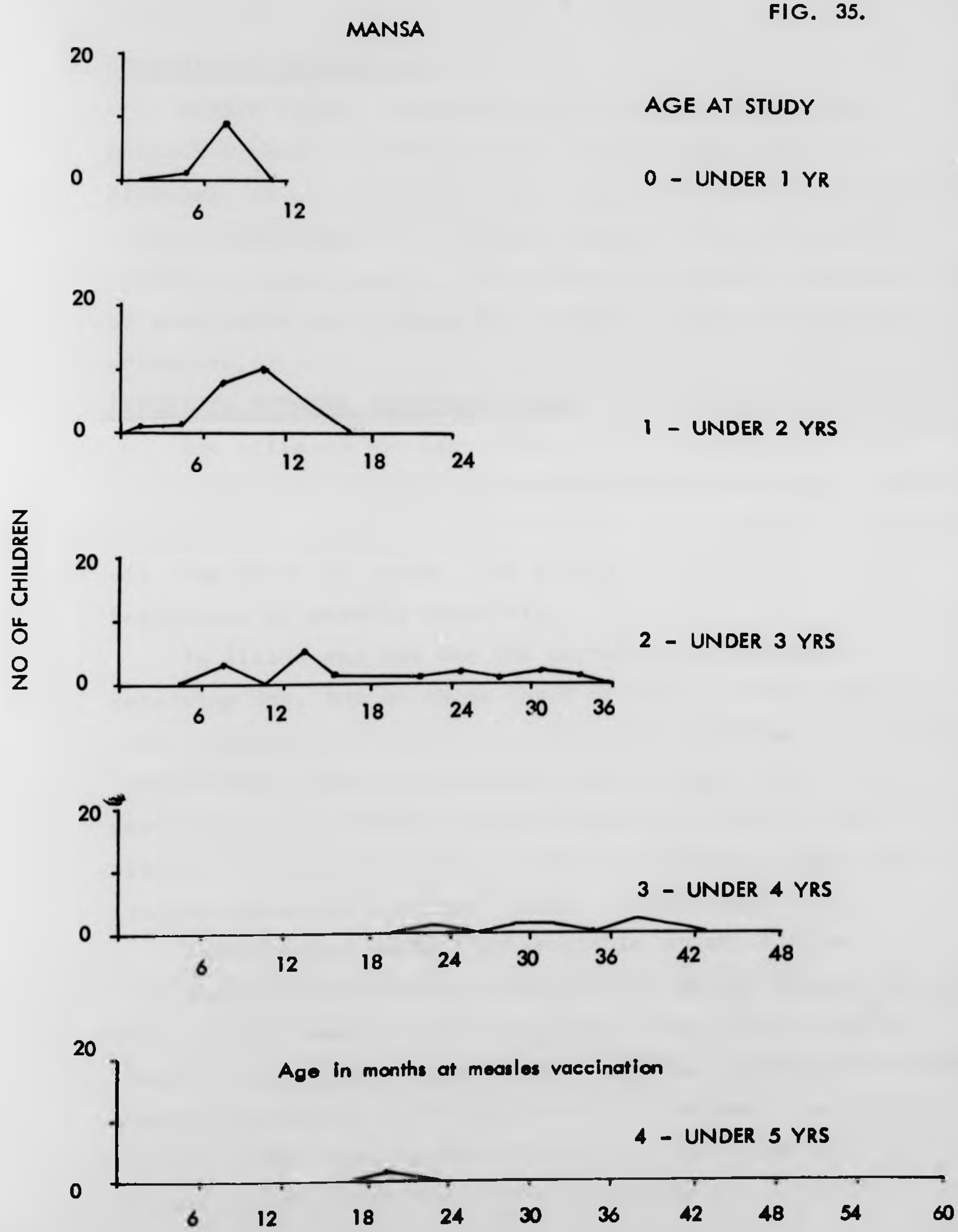
NAMITAMBO

FIG. 34.



DISTRIBUTION OF CHILDREN BY AGE (IN MONTHS) AT MEASLES VACCINATION

FIG. 35.



COMBINATION OF VACCINES.

GATEFF (1971) suggests that one must vaccinate the maximum number of people against the maximum number of diseases, at one attempt. The combination of vaccines permit the administration in a single attempt of one or several vaccines to one person. In order for a vaccine combination to be acceptable for routine use it must be safe and it must be effective.

DIPTHERIA TETANUS PERTUSSIS (DPT)

The efficacy and harmlessness of this combination has been officially recognised and confirmed many times. CHEN et al (1956) BARR (1955). This combination of vaccines was used in all four areas of study. The policy was to give separate injections at monthly intervals.

In Ilesha and Esa Oke the percentage of children receiving one, two or three doses of DPT is higher than the corresponding figures for Namitambo and Mansa. In Esa Oke immunisations are available only once a week, but the percentage of children immunised at this clinic is very similar to the immunisation coverage at Ilesha clinic where immunisations are available daily. (Table 105).

Immunisation being only available at the clinic once a week does not seem to be a deterrent to the mothers in Esa Oke, while in Namitambo it could be one of the reasons for the smaller percentage of immunisation given. The mothers in Esa Oke are motivated sufficiently and are capable of bringing their children on a specified date for their immunisations. Another factor which could have accounted for the higher percentage of immunisations given in Esa Oke could be the localised nature of the village. The clinic is situated very near the village market place. Mothers quite often visit the market to buy or sell their produce or goods. Combining a visit to the market with a visit to the Under Fives Clinic was a practical solution to the problem of 'lack of time', which one encountered so much among these mothers.

TABLE 105

DISTRIBUTION OF CLINIC ATTENDERS (AGED ONE YEAR AND OVER WHO HAD THEIR 'ROAD TO HEALTH' CARDS ON DAY OF SURVEY) BY NUMBER OF DOSES TRIPLE VACCINES BY AREA.

TRIPLE VACCINE DOSES	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	15% (40)	13% (35)	30% (18)	23% (26)	17% (119)
1	9% (25)	7% (18)	16% (10)	20% (23)	11% (76)
2	13% (35)	13% (35)	8% (5)	20% (23)	14% (98)
3	63% (168)	67% (175)	46% (28)	37% (42)	58% (413)
TOTAL	100% (268)	100% (263)	100% (61)	100% (114)	100% (706)

Table 105.

In Ilesha 9% of children received the first dose only of DPT while 13% received two doses and 63% received all three doses. These figures are for children aged 1 year and over, who had a 'Road-to-Health' card on day of survey. (Table 105)

In each area there is a fall off in the proportion having a full course of vaccine, i.e. children having all three doses are far less than children having the first dose only. Figure 36 to 39 show the distribution of children by age (in months) at DPT vaccination for each area. This emphasises one of the drawbacks of using vaccine that had to be given in divided doses. It is desirable wherever possible to reduce the number of doses. MANDE (1971) concluded that giving two instead of three injections of diphtheria or tetanus toxoid does not markedly decrease the percentage of children effectively protected provided the interval between injections is increased to two months; however this same reduction in the number of doses of pertussis does decrease the quality of the response.

At present tetanus toxoid incorporated in the DPT vaccine is given in three doses at monthly intervals. However two phase vaccination is under trial. Since as yet diphtheria and pertussis vaccines are given in three doses, it is practical to give tetanus toxoid in combination with these two as DPT. The value of single dose tetanus toxoid in pregnanant mothers has been stressed by STANFIELD (1973) Immunisation of mother with tetanus toxoid after the sixth month of pregnancy confers passive immunity in the newborn.

Unlike whooping cough and tetanus which are major problems in developing countries, diphtheria is not really a priority for immunisation. However it can conveniently be given in combination with the pertussis and tetanus vaccine. The rational approach would be to include diphtheria in National immunisation programmes and thus hopefully avoid future outbreaks of diphtheria

AGE AT DPT VACCINATION.

The average age when DPT vaccination was given seems to be similar in Ilesha and Esa Oke, and coincided with the general policy in Africa, i.e. 3 doses at monthly intervals, starting at three months. However, in Mansa the first dose seems to have been given at a later age, i.e. between the age of three and six months. The two subsequent doses were given at intervals of two to three months. FIGURE 39

In Mansa in the older age cohorts, i.e. children over the age of two years at the time of study, the age when they received their first DPT seems to have been less rigid, and was seen to have been evenly distributed throughout the age group.

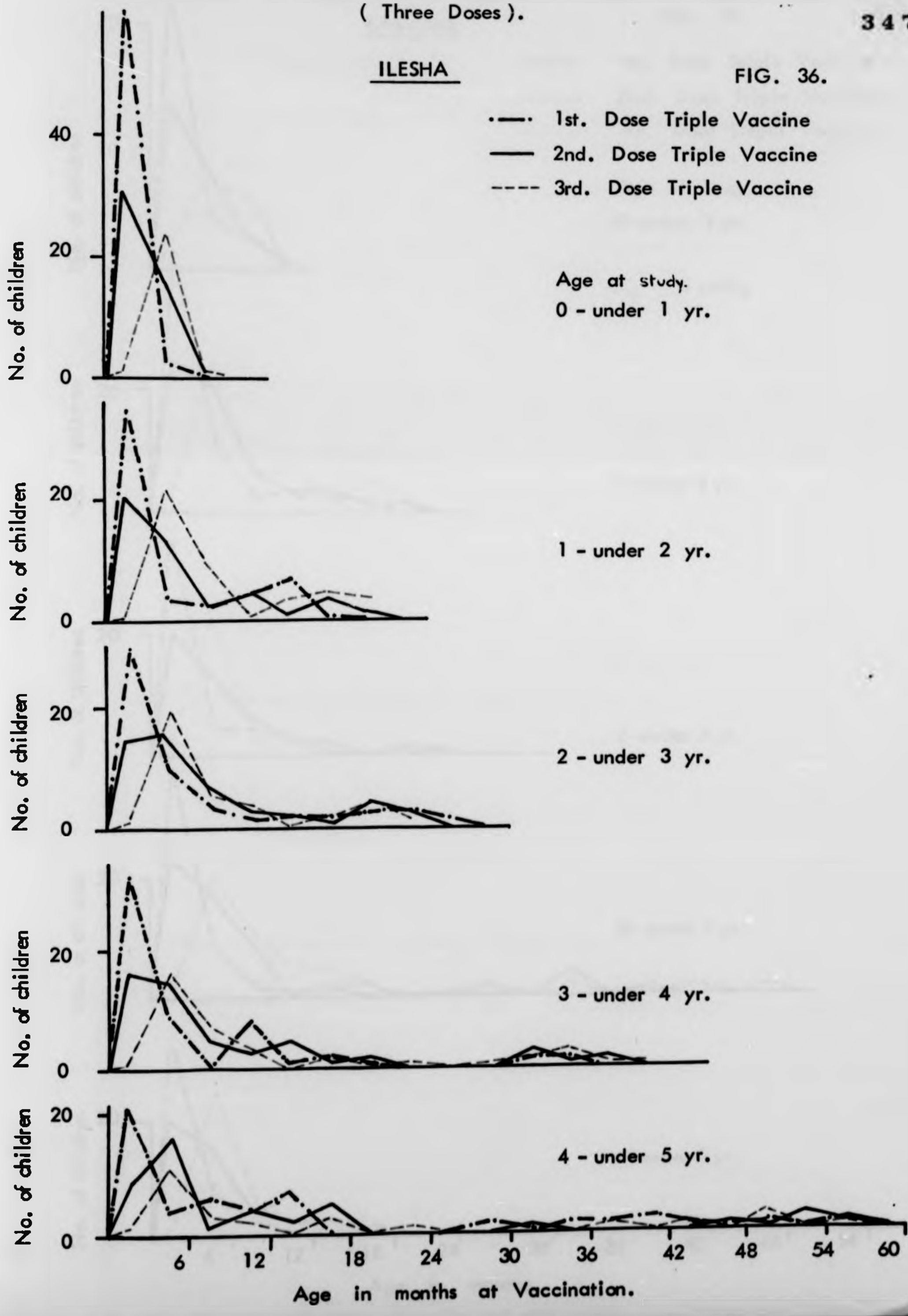
In Namitambo, the number of children who had received DPT were too small to allow any firm conclusions to be drawn regarding peak age of vaccination.

In Ilesha and Esa Oke in all cohorts peak age for all three doses of DPT vaccine was found to be in the first year of life. In the five year period preceding this study the policy for age of DPT vaccination seems to have been constant in these areas.

It is clear looking at Namitambo, Figure 38 that very few children have been immunised. Again in Mansa of the children in the older cohorts very few are seen to have been immunised against DPT. This is a reflection of the pattern of clinic services. The clinics in Mansa were set up in 1970 and that in Namitambo in 1969. Clearly the children have prior to the commencement of the clinics been unable to obtain their vaccinations at the right time.

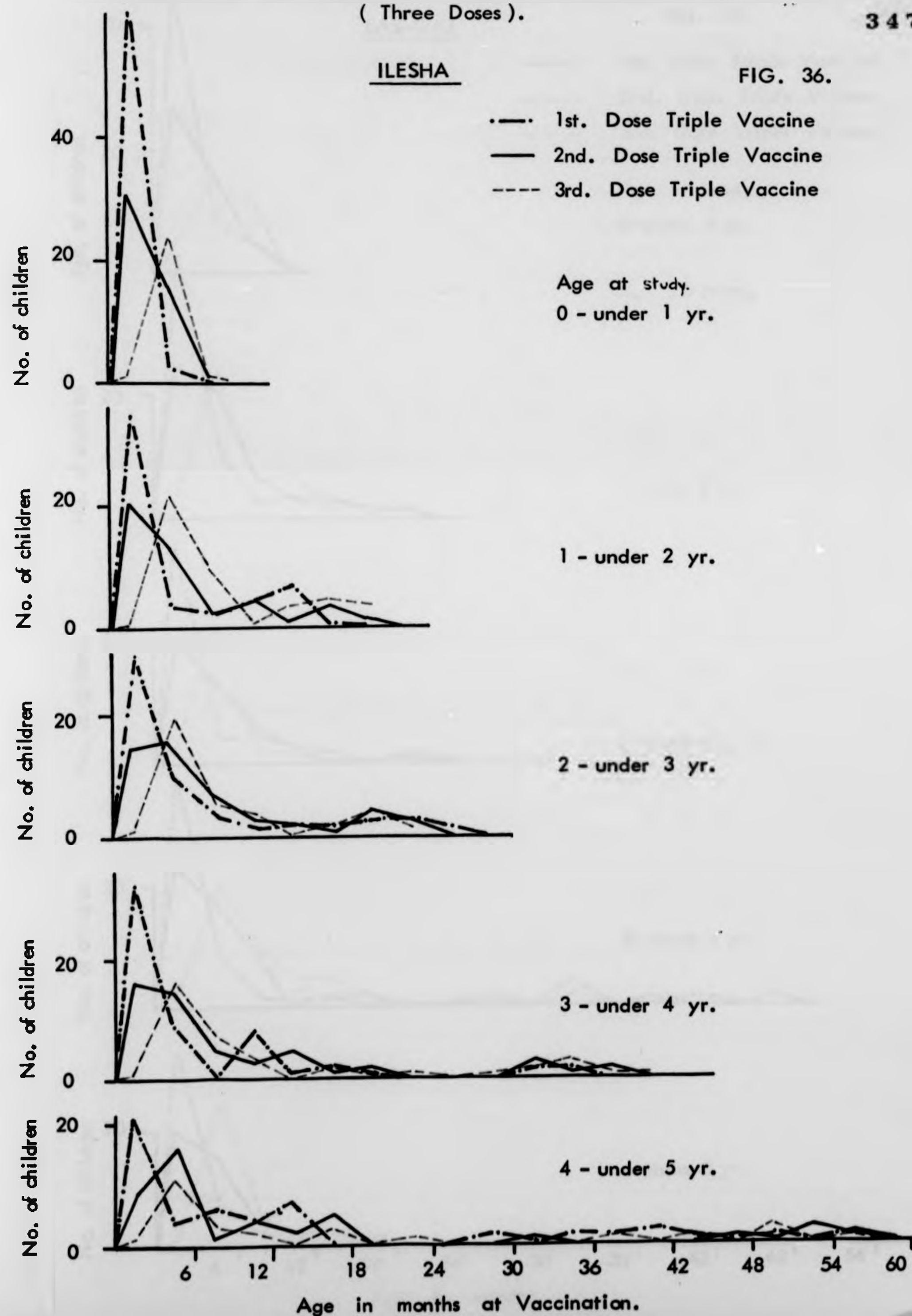
DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(Three Doses).

FIG. 36.



DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(Three Doses).

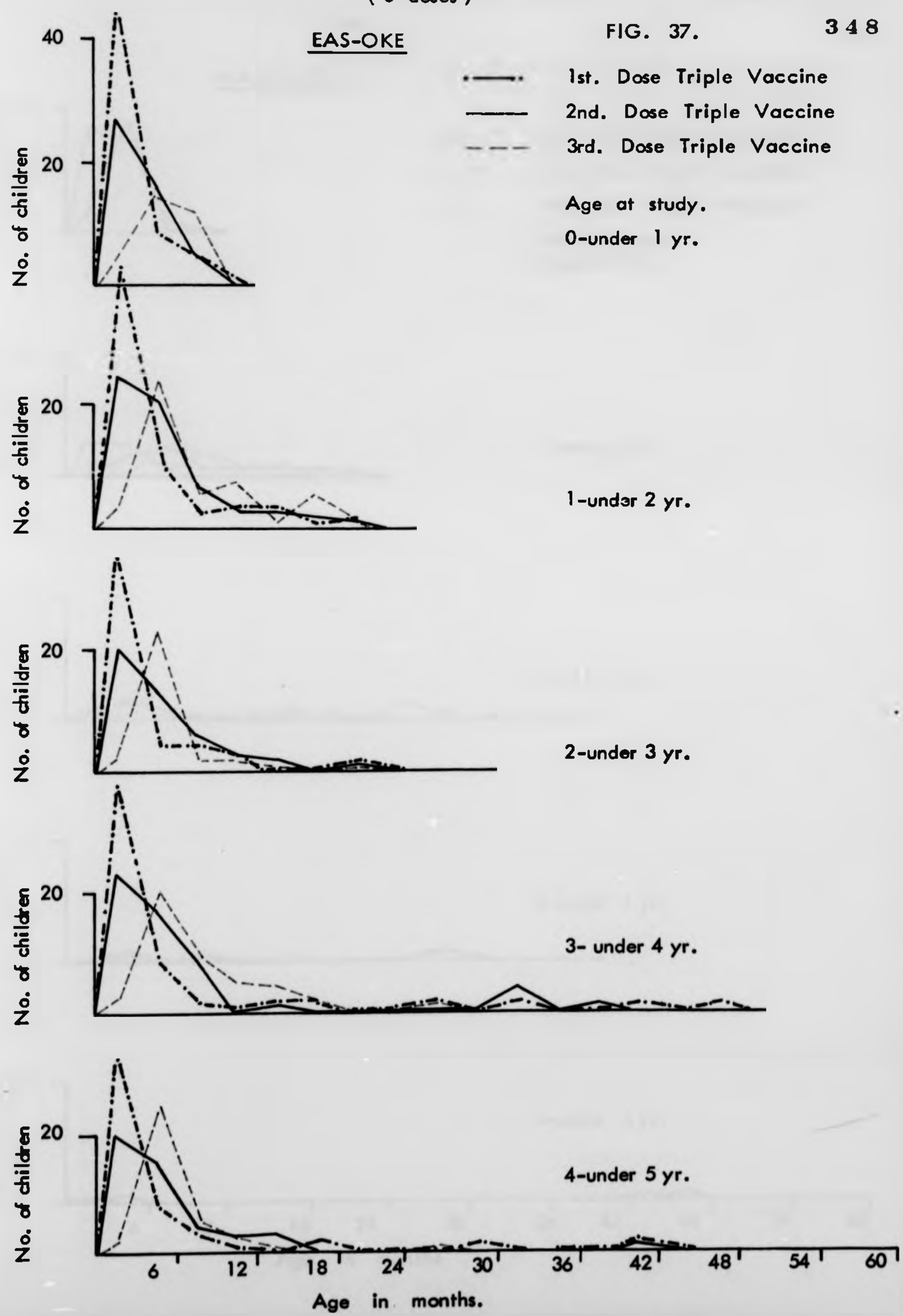
FIG. 36.



DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.

(3 doses)

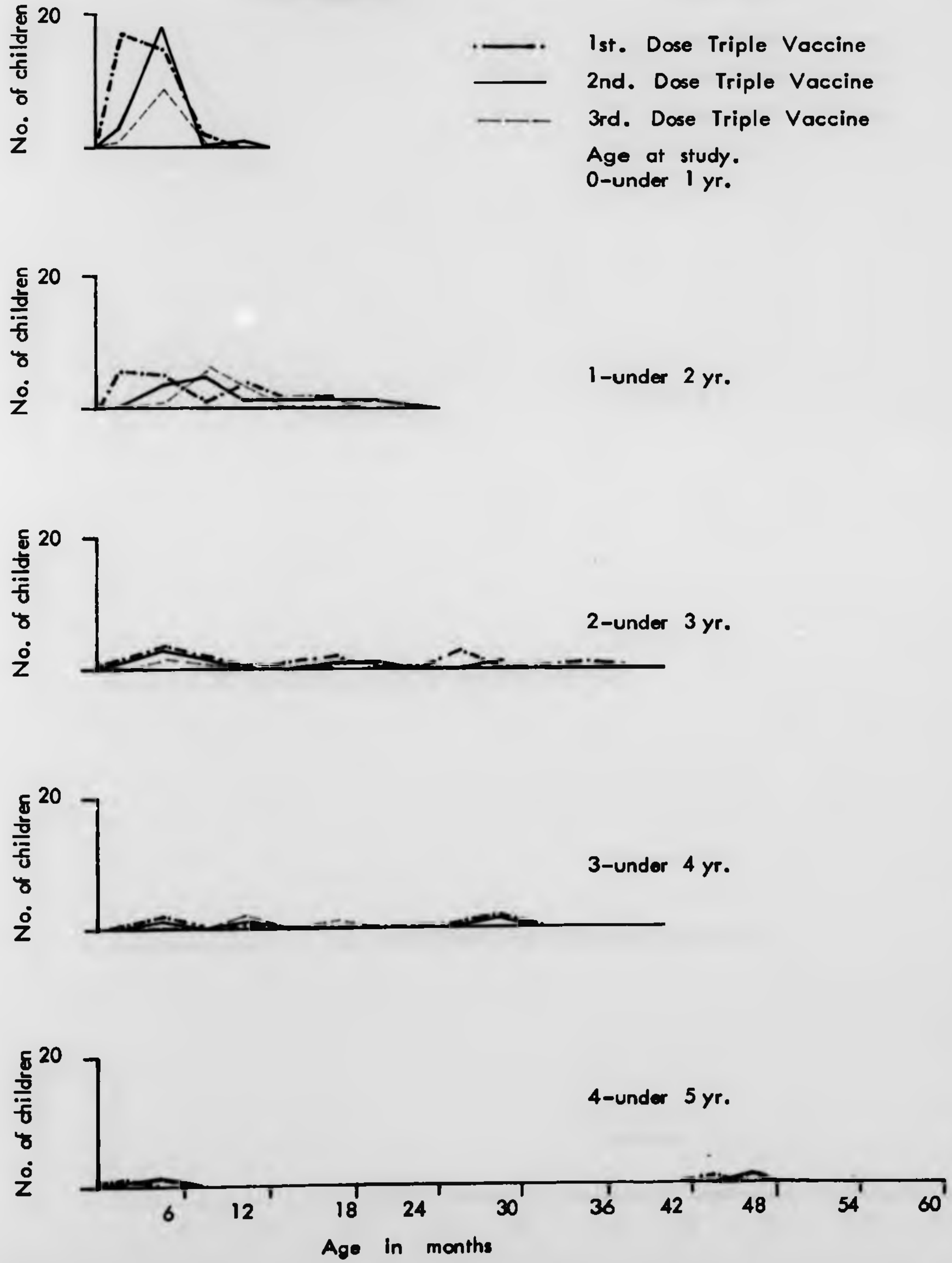
FIG. 37.



DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(3 doses)

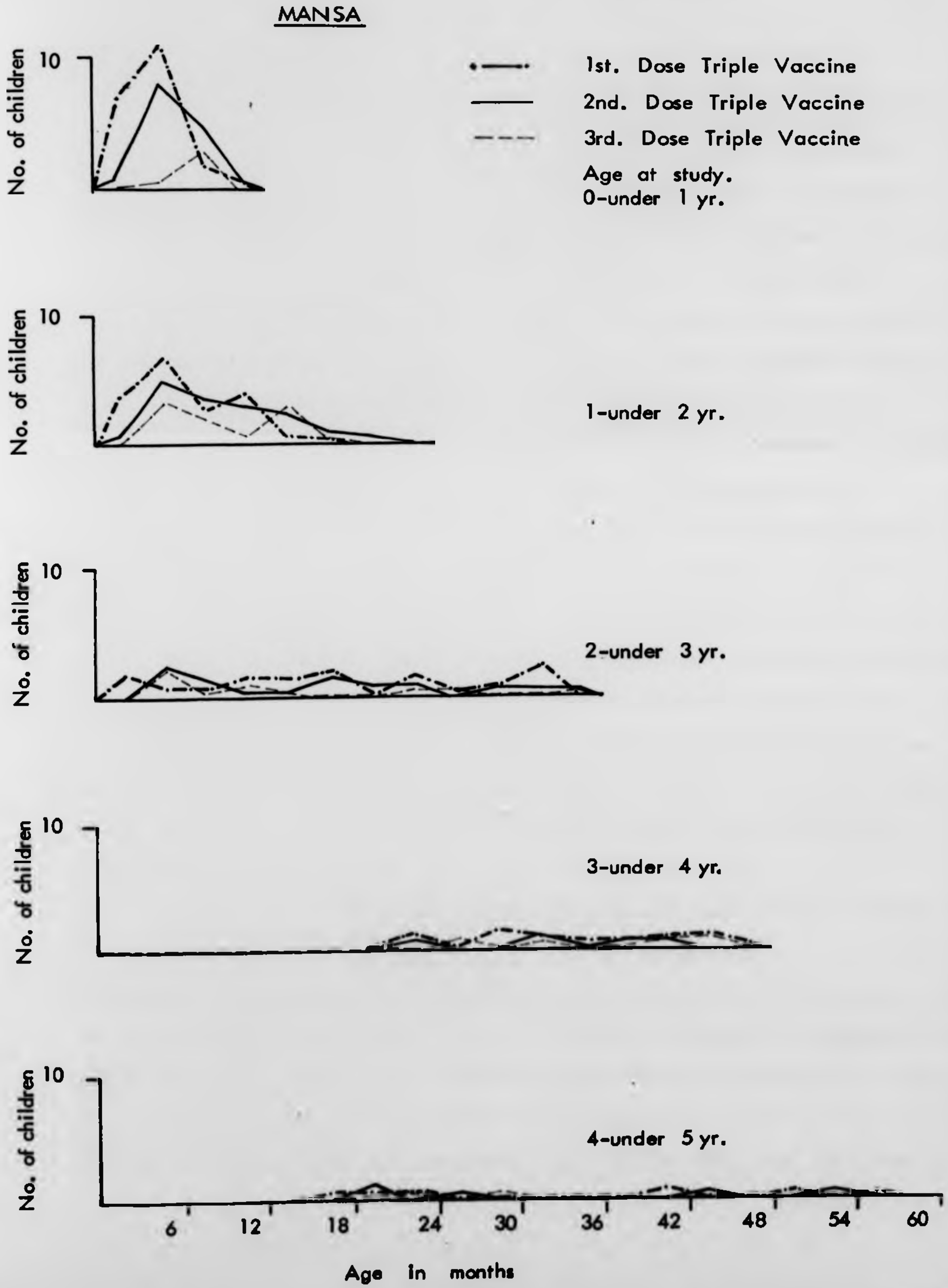
NAMITAMBO

FIG. 38.



DISTRIBUTION OF CHILDREN BY AGE (in months) AT TRIPLE VACCINATION.
(3 Doses)

FIG, 39.



POLIO IMMUNISATION.

Initial immunisation against poliomyelitis is only fully effective if two or three doses of the vaccine are given. One of the major problems encountered in this type of phased immunisation programmes (as shown earlier in immunisation with DPT) is the rapid decrease in attendance at successive vaccination sessions. For operational reasons this type of prophylaxis is still beyond the scope of mass immunisation programmes, and is therefore confined to protection of individuals without immediate epidemiological impact. PAVIOT (1971). DOMOK (1971) in discussing the situation of poliomyelitis in tropical Africa reports that between 1951 - 1955 and 1966 - 1969 less than ten fold increase in poliomyelitis was reported from Zambia an over tenfold increase for the same period was reported from Malawi and Nigeria. He also adds that in most parts of Africa the number of cases of poliomyelitis is under reported. He explains that his figures taken from official registers would therefore very likely be an under estimate of the incidence of poliomyelitis in these countries.

The considerably low sero conversion with polio vaccination has been one of the problems of polio vaccination programmes. DOMAK (1971) has calculated the expected sero conversions with first, second and third doses of polio vaccine by taking the average sero conversion rates to individual poliovirus types, i.e. types 1, 2 and 3, after vaccination with different doses derived from literary data published from tropical countries.

His figures are as follows:

TABLE 106.

DOMOK (1971)

Number of doses PV	sero conversion to type 1 polio	sero conversion to type 2 polio	sero conversion to type 3 polio
1	51%	67%	49%
2	67%	93%	76%
3	90%	100%	92%

Various explanations are offered for the poor sero conversion with polio vaccines. Interference between entero viruses and vaccine strains has been incriminated by many authors. Antibodies present in human breast milk are said to be capable of neutralising polio virus. SABIN (1950). However ADCOCK AND GREENE (1971) have shown that an interval of two to three hours between breast feeding and vaccination was sufficient to overcome response inhibition, but PERADZE et al (1968) have showed that under field conditions in Nigeria, prevention of breast feeding even for a short time was not possible.

Malnutrition and protein deficiency improper storage of live vaccine have also been incriminated as responsible for the lowered response. Another factor thought to be responsible is the use of improper vaccine schedules. SABIN et al (1960) has emphasised that for optimum results that the vaccine should be applied in mass campaigns where a very high proportion of susceptible children are fed simultaneously, thus providing opportunity to replace the enteroviruses with vaccine strain partly by direct feeding and partly by wide scale spreading of vaccine strains to contacts.

TABLE 107(a)

DISTRIBUTION OF CLINIC ATTENDERS (AGED ONE YEAR AND OVER) WHO HAD THEIR 'ROAD-TO HEALTH' CARDS ON DAY OF SURVEY) BY NUMBER OF DOSES POLIO VACCINE BY AREA.

DOSES POLIO VACCINE	AREA				
	ILESHA (NIGERIA)	ESA OKE NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
0	60% (162)	71% (187)	34% (21)	26% (29)	57% (399)
1	12% (31)	7% (17)	15% (9)	18% (21)	11% (78)
2	12% (31)	5% (14)	10% (6)	18% (21)	10% (72)
3	16% (44)	17% (45)	41% (25)	38% (43)	22% (157)
TOTAL	100% (268)	100% (263)	100% (61)	100% (114)	100% (706)

In the present survey it was seen that all three doses of polio vaccines were given to 16% of survey children in Ilesha, 17% in Esa Oke, 41% in Namitambo and 38% in Mansa. Table 107(a) (These figures are for clinic attenders aged 1 year and over who had a 'Road-to-Health' card on day of survey.)

TABLE 107*(b)

DISTRIBUTION OF ALL SURVEY CHILDREN BY NUMBER OF DOSES OF POLIO VACCINE GIVEN BY AREA.

Number of doses of Polio vaccine	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)
0	74% (323)	80% (324)	72% (187)	60% (188)
1	7% (31)	4% (17)	11% (28)	10% (31)
2	8% (33)	3% (14)	5% (14)	13% (42)
3	11% (47)	13% (50)	12% (32)	17% (53)
TOTAL	100% (434)	100% (405)	100% (261)	100% (314)

* This table should not be used to draw any comparison between areas with regards to polio vaccinations, as no allowance has been made for the age distribution of children. Some children might be too young to be eligible for polio vaccination. However, this table has been used in calculating the percentage sero conversion of the entire under fives population seen in survey. table 108.

Table 107(b) shows that 74%, 80%, 72%, and 60% children in Ilesha, Esa Oke, Namitambo and Mansa respectively had not received any polio vaccinations at all. Only 11% in Ilesha 13 % in Esa Oke, 12% in Namitambo and 17 % in Mansa had received all three doses of polio vaccine .

The percentage coverage coverage by polio vaccine in all the areas of study was low (Table 107(b)) The estimated sero conversion rates for the vaccinations in each area can be obtained by applying Domak's Figures in Table 106 to those children with one, two or three doses of polio vaccine in each area (Table 108).

TABLE 108.

EXPECTED IMMUNITY STATUS OF ALL SURVEY CHILDREN IN EACH AREA DUE TO THE VACCINATIONS CARRIED OUT IN THESE AREAS. (% WITH SERO CONVERSION)

	ILESHA	ESA OKE	NAMITAMBO	MANSA
Sero conversion to				
Type 1 polio virus	20.5%	12.6%	14.8%	36.8%
Type 2 polio virus	25.2%	14.8%	18.1%	45.3%
Type 3 polio virus	21.4%	13.0%	15.3%	38.6%

Therefore some 20% sero conversion was achieved for all three types of polio viruses in Ilesha, and a somewhat lower sero conversion in Esa Oke and Namitambo. A rather higher degree of sero conversion was achieved in Mansa.

There was no explanation for the poor coverage with polio vaccination in these four areas. Even in areas like Ilesha and Esa Oke where the general immunisation coverage was fair, the coverage for polio was nevertheless poor.

There is no concensus of opinion regarding polio immunisation in Africa. Some argue that since polio causes few deaths and the frequency of disability due to polio is low that polio vaccination is not justified. ROBBINS (1971b) takes a contrary view. He argues that epidemic poliomyelitis is beginning to appear in parts of the world where it was formerly endemic. Further if trends continue, paralytic cases with the accompanying permanent disability will increase. Robbins also notes that polio vaccine is cheap and effective.

If indeed polio is likely to become increasingly more common, the findings of the present study suggest that the use of polio vaccine be stepped up in all areas so that a greater population coverage is achieved.

Age of polio vaccination

Trivalent polio vaccine given in three doses was seen to be the procedure of choice in all areas of study. The ideal age at which to start polio vaccination was not well defined in any of the areas. The conflicting opinions as regards the effects of breast milk to the immune response was a guiding factor in some areas. In rural African society breast feeding may be carried on until the child is over eighteen months of age. Withholding polio vaccination till cessation of breast feeding would be detrimental to the child. In Ilesha the peak age for the first dose was seen to be between the third and

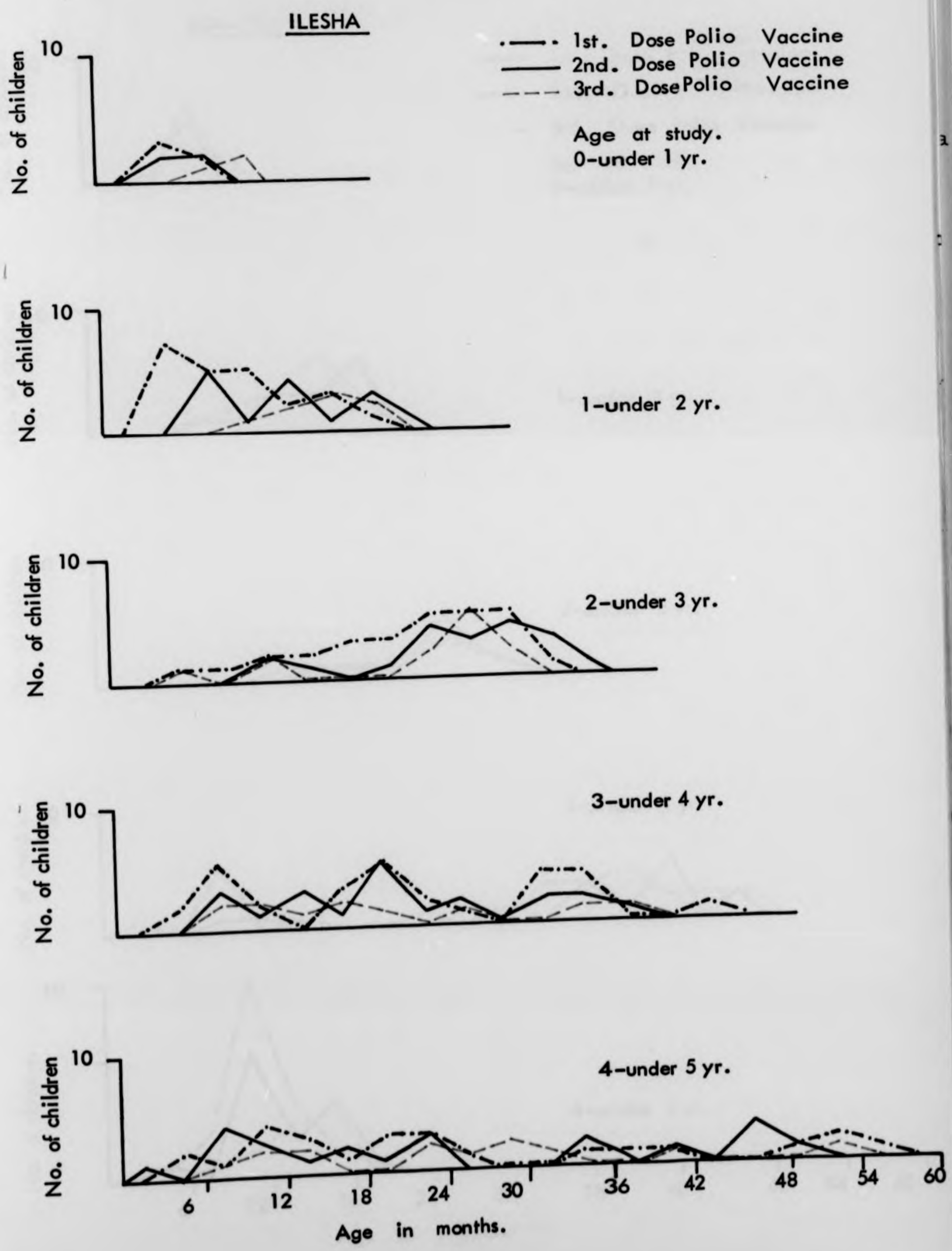
sixth month. In Esa Oke the majority of children had the first dose of polio vaccine a little later in life, i.e. between six and nine months. (Figure 41).
In Namitambo the age at which the first dose of polio vaccine was given tended to be much earlier, i.e. in the first three months of life. In Mansa the pattern seems to be similar to that in Ilesha where the peak age for giving the first dose of polio was between the third and sixth months. The recommended interval between doses is eight weeks. From the study areas it was seen that the peak age as for the second and third doses seem to lie two to four months apart for all areas. However no firm conclusions can be drawn from this survey on the age of polio vaccination due to the small numbers of children who had received the immunisation.

If one looks at the results of clinic study for each of the four areas of study it is seen that in Ilesha in May only one dose of polio vaccine was given. Similarly in March and April 1971 no children received the third dose of polio vaccine. This could have arisen as a result of vaccine shortage but there is no information on this point. (Table 84).
The trend for polio immunisation seems to have improved towards the latter part of the year, as shown by the larger numbers of children receiving their third dose of vaccine in the months of August to December. The results of the clinic study in Esa Oke suggest that polio vaccination only started here in August/September 1971. So prior to the present study (carried out in Esa Oke in February 1972) it is seen that the number, of children who had received polio vaccine was small.

In Namitambo fewer polio vaccinations were given, as were the other vaccines, than in the other three areas.

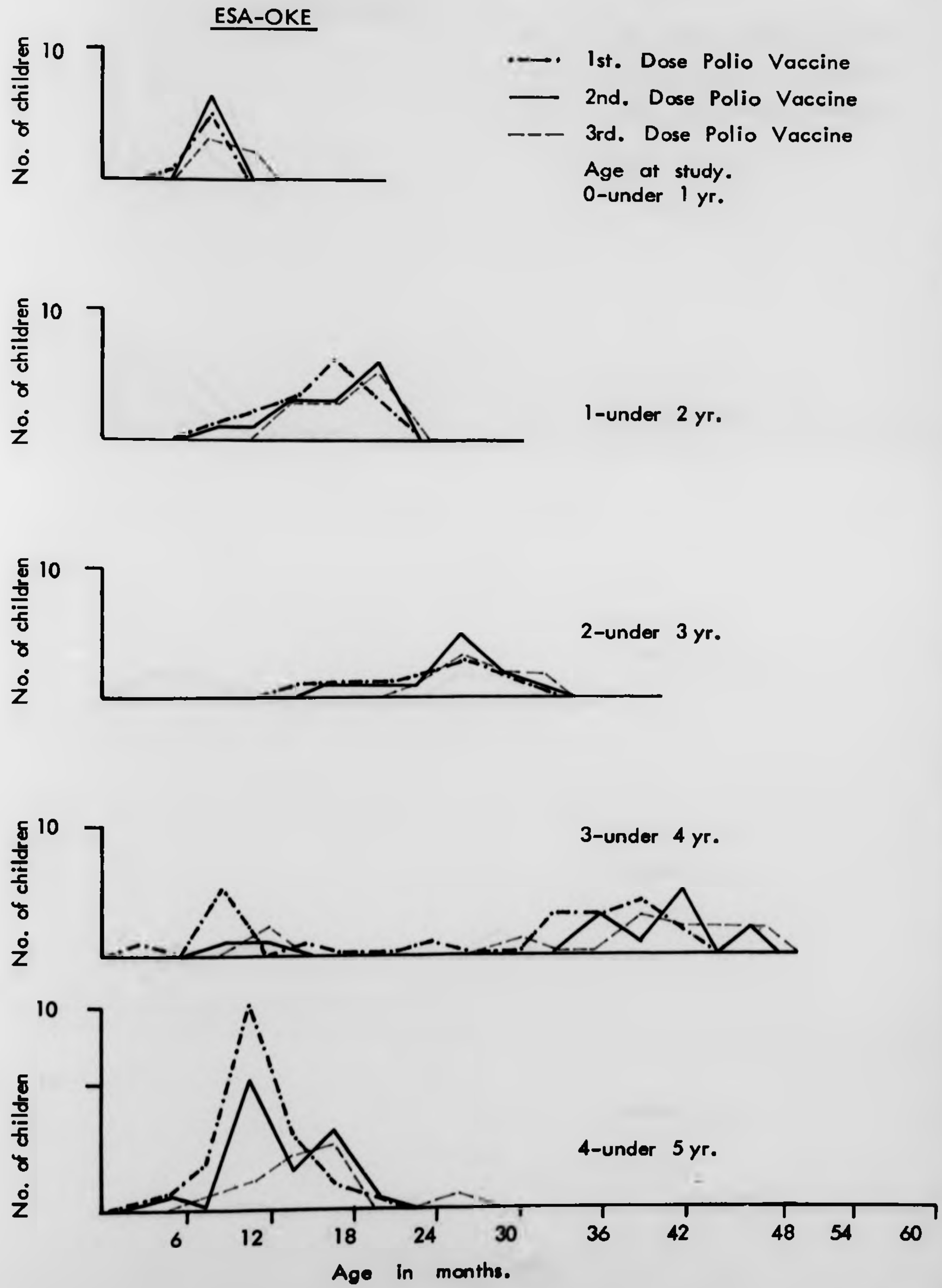
DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION.

FIG. 40.



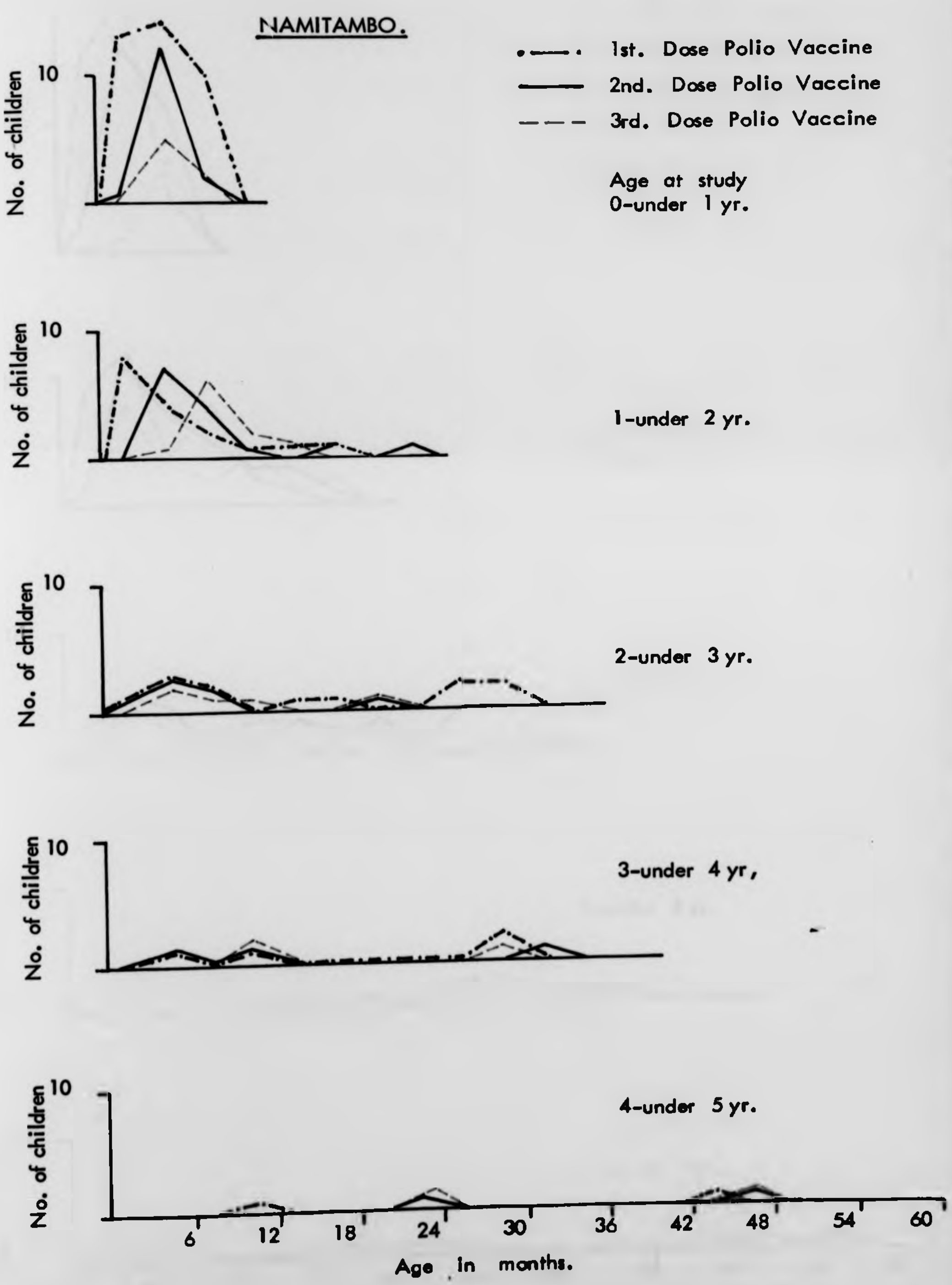
DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION.

FIG. 41.



DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION.

FIG. 42.



DISTRIBUTION OF CHILDREN BY AGE (in months) AT POLIO IMMUNISATION

MANSA

FIG. 43.

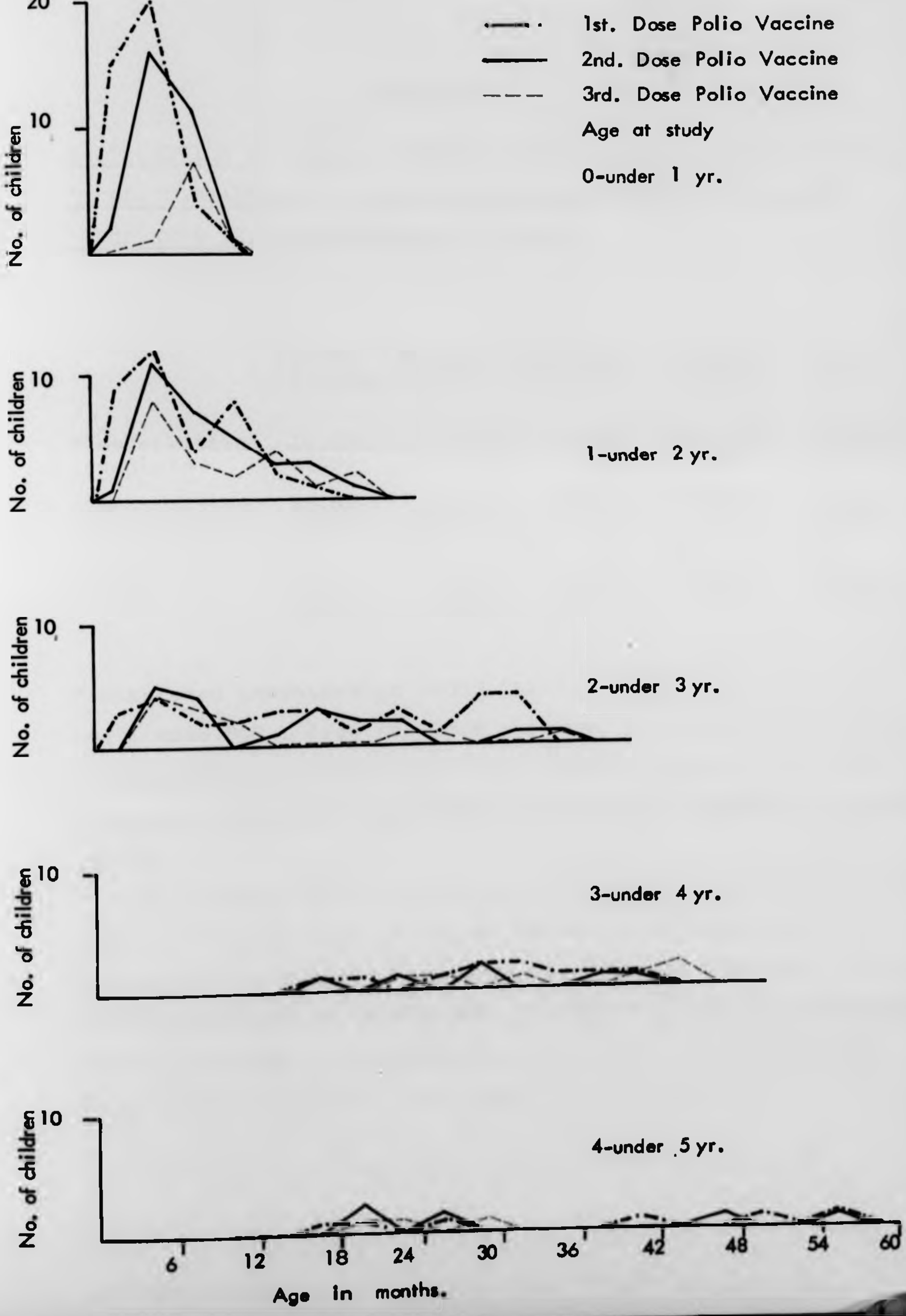


TABLE 109.

DISTRIBUTION OF CLINIC ATTENDERS AGED 1 YEAR AND OVER (HAVING 'ROAD-TO-HEALTH' CARD AVAILABLE ON DAY OF SURVEY) WHO HAVE COMPLETED THEIR IMMUNISATION BY AREA.

	AREA				
	ILESHA (NIGERIA)	ESA OKE (NIGERIA)	NAMITAMBO (MALAWI)	MANSA (ZAMBIA)	ALL AREAS
*Immunisation complete	14.2% (38)	11.8% (31)	44.2% (27)	20.2% (23)	16.9% (119)
Immunisation incomplete	85.8% (230)	88.2% (232)	55.8% (34)	79.8% (91)	83.1% (587)
TOTAL	100.0% (268)	100.0% (263)	100.0% (61)	100.0% (114)	100.0% (706)

* completed immunisation would indicate that the child has had 1 dose BCG 1 dose smallpox vaccine, 1 dose measles vaccine, 3 doses polio vaccine and 3 doses triple vaccine. In Zambia these children have been termed "Protected" children. SHATTOCK (1972)

In Ilesha 14.2% of children who attend the clinic (and had a 'Road-to-Health' card on day of survey) had completed their immunisation, while in Namitambo 44.2% of children had completed their immunisation (Table 109). However, it must be remembered that in Namitambo the proportion of children attending the Under Fives Clinic was less than in the other areas.

However, it appears that if a child does attend the Under Fives Clinic in Namitambo then his chances of completing the immunisation is far greater than in all other areas. This fact is also substantiated in Table. 111

One important aspect of the work of the Under Fives Clinics is to ensure that children are vaccinated against as many preventable diseases as possible. In the present survey this aspect of the clinics functions has been studied in depth. Wide variation was seen between areas with regards to age at vaccination, and the population coverage. Two of the clinics (Ilesha and Mansa) carried out vaccination daily while in Namitambo and Esa Oke vaccinations were available once a week only. It is suggested from the present study that the availability of vaccination at a clinic daily would allow a greater population coverage. However, exceptions were seen as pointed out earlier. Many mothers still tend to attend the Under Fives Clinic when her child is sick. It may not be possible (depending on the state of health of the child) to immunise it when it is "ill". It is suggested that a mother should be encouraged to bring all her children under five when she attends to obtain treatment for only one of her children. This might provide an opportunity for the clinic staff to immunise the healthy siblings.

Policies regarding age of vaccination, number of doses to be given, route of administration should be laid down and adhered to.

If refrigeration facilities are provided at Esa-Oke there is reason to believe that the immunisation coverage in this area would be further improved. Possibility of using combinations of vaccines such as BCG and smallpox should be further investigated.

It is suggested that greater emphasis during health education sessions should be placed on the purpose of vaccination, and the importance of completing immunisation schedules. It was also revealed during the field survey that many mothers did not appreciate the need for vaccinating their children.

The immunisation patterns of the children in the community as was shown before, would be difficult to obtain from clinic records. Further clinics do not collect information on the age at immunisation or the number of doses of vaccine given per child. The only simple way of obtaining this information is from a field survey.

It seems fairly clear that this type of survey is a highly effective way of establishing the apparent immunisation status of children attending the Under Fives Clinic. This type of exercise is simple and quick to do and could well be employed on a wide scale to monitor immunisation programmes with a view to altering the policy where this may seem necessary.

ACTIVITIES IN THE CLINICS.

One aspect of evaluating the work of the clinic is to determine what proportion of the eligible population use the individual facilities provided. In the present study a wider evaluation was attempted by not only noting the work done in the clinic, but also by assessment of the population who attend and who did not attend the Under Fives Clinics. In the following section an attempt is made to correlate the findings of the clinic study with those of the field study.

TABLE 110.

AVERAGE NUMBER OF CLINIC ATTENDANCES PER MONTH, AND THE PERCENTAGE OF CLINIC ATTENDERS AMONG CHILDREN LIVING WITHIN 2½ MILES FROM CLINIC.

Area	Attendance/ month	Attendance/ session	Attendance/ health worker	% of children attending clinic
Ilesha	12,597	525	38	87
Esa Oke	1,719	72	36	91
Namitambo	242	61	30	68
Mansa	1,099	46	15	84

It is seen in Table110 that in Ilesha, Esa Oke and Namitambo each staff member at the clinic sees between thirty and thirty eight children per session. The percentage of population covered in Namitambo is far less than in Ilesha and Esa Oke, i.e. 87% and 91% in Ilesha and Esa Oke, but only 68% in Namitambo. In Mansa, where each staff member sees only fifteen patients per day, there is a population coverage of 84%. All clinics, except that in Namitambo, are held daily. The Namitambo clinic is held once a week only, and this could account for the lower population coverage here. The duration of the clinic sessions are approximately the same in all areas. All clinics opened around 7.30 a.m. and carried on till around 2 p.m., or until all the children were seen. None of the clinics operated an appointment system. This would not be feasible in these areas.

From Table 110 it is also interesting to note that even though in Ilesha an average of 525 children were seen daily at the clinic, and at Esa Oke only seventy two children per day, yet the population coverage in Esa Oke, i.e. 91% is superior to that in Ilesha at 87%.

It is quite clear that under these circumstances a comparison of the total numbers of children seen per session in Ilesha and Esa Oke would be a poor indication of the effectiveness of these clinics in terms of their coverage of population.

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TABLE 111.

DATA ON IMMUNISATION FROM FIELD AND CLINIC STUDY FOR EACH AREA.

Immunisation	Ilesha		Esa Oke		Namitambo		Mansa	
	*F	*C	*F	*C	*F	*C	*F	*C
BCG	74%	1:20	66%	1:101	25%	1:5	47%	1:8
SP	56%	1:30	35%	1:246	42%	1:3	79%	1:10
Measles	44%	1:29	29%	1:123	5%	1:17	24%	1:7

*F Proportion of children who received the immunisations (results of field survey)

*C Ratio - Total immunisation given (doses)/month
Total attendances/month
(results from clinic study)

If one used the ratio total immunisation given/month to total attendances/month to give a measure of the immunisation status of a population attending the clinic, one could be seriously led astray. By taking findings at face value it appears that a clinic attender in Namitambo had a one in five chance of being given BCG vaccination, while in Esa Oke this would be a one in 101. Table 111. One might be tempted to conclude from this that Namitambo is achieving a higher degree of immunisation in the population. However from the field survey it is seen that in Esa Oke 66% of children had BCG while in Namitambo only 25% children had been immunised with BCG.

In Namitambo the clinic opened only once a week, and on the same day immunisations were given. Quite clearly children are being referred to clinic on this day, and have a greater chance of being immunised. The Esa Oke clinic is opened six days a week but immunisations are carried out once a week. This decreases the chances of a child being immunised.

Immunisations per month might be taken to give some indication of the scope of immunisation at a clinic. This can clearly be highly misleading.

It has been shown that by looking at clinic data it is not possible using simple indices like immunisation given per month and the clinic attendances per month to assess the effectiveness of the clinic.

CHAPTER VII. CONCLUSIONS AND RECOMMENDATIONS.

1.0 Health Services Evaluation

Health Services can be evaluated in terms of:

(1) The use made of the facilities provided, and

(2) The effect of the services upon the health of the community served.

The literature contains a number of reports on the organization of the under fives clinics; some reports stress the need, and the benefits, that can result from their modification. However, evaluation of the clinics in the terms of the use made of their services or of their effects on child health has been carried out on a limited scale. Most studies only examined the health of those attending a clinic, ignoring those who do not take advantage of these facilities.

This study breaks new ground in that it demonstrates the feasibility of measuring the uptake within a community of health care, by gathering data from home based record systems i.e. the Road to Health Card, as well as from the parents' information on their children. At the same time it permits, by interview and simple medical examination, assessment of the health of children who attend, and who do not attend the clinic. By linking the findings from such field surveys with data derived from investigations of the work of the clinic, an overall view can be taken of both the uptake and effects on health of such clinics.

2.0 Use made of facilities

2.1 Ideally, all children under the age of five should regularly attend an under fives clinic. However, in the present survey it was seen that 87%, 91%, 68% and 84% in

Ilesha, Esa Oke, Namitambo and Mansa respectively attended the under fives clinic. Many of the mothers attending these clinics said they did so to obtain treatment when the child was sick. The majority of mothers who never took their children to the under fives clinic felt it was unnecessary as their children were never seriously ill. Thus mothers tended to consider the under fives clinic as primarily a treatment centre and were not aware of the other, for example, immunization services they provided. Perhaps this is not surprising as the approach of western health care systems has been to invest curative systems with both finance and prestige. If full advantage is to be taken of the comprehensive services offered by the under fives clinics, then health education programmes in each of these areas should stress the preventive aspects of the clinic services.

2.2 In contrast to their attitude to the under fives clinic, mothers felt that the services of the ante-natal clinic should be utilized regularly during the pregnancy and not just when problems arise.

This view was confirmed by the high ante-natal clinic attendance noted in all of the four areas. These ante-natal clinics should provide a good contact point for disseminating information to the mothers on the benefits of regular attendances at under fives clinics once the baby is born.

It is recommended that active steps be taken in all four areas to inform mothers about the under fives clinic. Whenever possible, linking the two clinics together on the same site, as has been done in many under fives clinics, would facilitate such steps. This would enable a pregnant mother to bring with her at each ante-natal clinic visit her under fives for routine preventive measures or, where necessary, for treatment.

3.0 Clinic Attenders and Non Attenders

3.1 In the present study a clinic attender was defined as a child under the age of five who attended the under fives clinic on one or more occasions. By this definition a child who had attended the clinic even once in its life time was included in the group 'clinic attenders'. This was essentially an operational definition and has the disadvantage that no distinction could be made between regular attenders and those who attended only once or intermittently. A child that attends a clinic regularly, say once every four weeks, could stand to benefit more from the services provided by the clinic, particularly preventive services such as immunization, than a child who attends ten times in one month and then keeps away from the clinic for a year.

In future studies it is recommended that information on total number of clinic visits per child and the frequency of visits at different ages be recorded. However to extract such information from the Road to Health card is difficult and time consuming.

3.2 In all four areas the clinics themselves did not keep a record of the individual children attending the clinic. The information available at the clinic included the number of new and old attenders per session, type and number of immunizations given. Children who, for example, did not attend the clinic regularly could not thus be identified. To identify such defaulters, it would be necessary to register all clinic mother to bring with her at each ante-natal clinic visit her under fives for routine preventive measures or, where necessary, for treatment.

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To maintain such clinic based records is beyond the capabilities of many under fives clinics, due to the extra clinic record storage space needed and increased burden on an already overworked staff. Further, information on such defaulters would be useless unless one had an adequate system of recall, or home visiting. Most under fives clinics do not have the facilities to under take such a task. Even the most elaborate clinic based record system will only list those children who attended the clinics. Those who never attended an under fives clinic cannot be included.

3.3 None of the clinics visited in the study areas maintained 'at risk' registers. Children "at risk" being those that need special attention in terms, for example, of having unusually poor family background, or some handicap.

It is recommended that all clinics should maintain an 'at risk' register. Each clinic could identify among its clinic attenders those children who can be classified as 'at risk'. It is not possible to define precisely what should constitute an 'at risk' child, as this would tend to vary from place to place. The progress of this special group of children could be monitored, and frequent defaulters followed up by, for example, home visits. However, an 'at risk' register at a clinic cannot identify those 'at risk' children in the community who have never attended an under fives clinic.

4.0 <u>Information on base line values</u>

The group of children visited at home was, for reasons already given, equivalent to a random sample of the child population. The data so collected could be used to set up base line values for the community. For example, the distribution of height and weight, from such samples, could be used to define the levels of nutrition of the population or act as reference values for use in the clinics. At the same time it permits, by interview and simple medical examination, assessment of the health of children who attend, and who do not attend the clinic. By linking the findings from such field surveys with data derived from investigation of the work of the clinic, an overall view can be taken of both the uptake and effects on health of such clinics. In most local communities this type of information is not available. It might be recommended that these base line data be collected when under fives clinics are either first set up in an area, or in areas with established clinics if this has not already been done.

5.0 Assessment of immunization status

From a study such as this, the immunization status of a community can be readily assessed and immunizations attributed to the local under fives clinic identified. On the assumption that immunization confers benefits, it would be valuable in terms of individual and community susceptibility to determine the relative immunization status of clinic attenders and non attenders. This assessment can be extended to examine such clinic activity by finding the proportion of children who had received all the vaccines available, i.e. "protected children". Following smallpox and tuberculosis (BCG) immunization, an independent index of such procedures can be obtained by examination of children for vaccination and BCG scars. For DPT and polio, uptake of immunization and levels of protection can only be reliably estimated from documentary evidence found in the home based records.

In the present survey it was found that 14.2%, 11.8%, 44.2% and 20.2% children respectively in Ilesha, Esa-Oke, Namitambo and Mansa had received three doses DPT, three doses polio, and a dose each of SP and BCG vaccine and hence were, by definition, "protected children".

6.0 Nutrition and breast feeding

In the present study, questions on breast feeding, nutrition and weaning diets were not asked. Difficulties arise both in eleciting such information from mothers and in assessing its accuracy. In future surveys, attempts could be made to incorporate questions on aspects of nutrition in clinic evaluation studies.

7.0 Use of home based cards in evaluation studies

A feature of the under fives clinic is the use of the Road to Health card which is kept by parents at home. In this study the cards were found to be well cared for, and while their loss was uncommon in West Africa it was more frequent in Malawi and Zambia. The reasons for such differences could arise from a charge being made for the cards in West Africa and also because the mothers there have been made more aware of the beneficial effects of having documented evidence of a child's progress.

The present study was only possible due to the availability of home based records. Thus, while the home based records are an effective and cheap way of maintaining the health record of a child from birth to the age of five, they are also very useful during field surveys as a source of information on the children.

In child health facilities where records are not retained by parents at home but kept at a clinic, field surveys, for example, to estimate the proportion of attenders to non attenders can still be carried out. However, the data from child health record cards would then have to be extracted from the clinic files. In most communities, correlation of clinic records with the child identified in the field study could prove difficult.

8.0 <u>Measurement of effects on health of Under Fives clinics</u>

8.1 Point prevalence studies may not be wholly suitable to assess the benefits to health that a health facility has conferred on the community. Such assessments depend upon comparisons between the health of the clinic attenders and non attenders at one point in time; no differences in health may be found or, alternatively, one or other group may show higher prevalence of disease. Assessment of these findings may prove difficult. For example, it may not be possible to determine whether or not the two groups started off with different patterns of health, and thus any lack of similarity observed in the field study may only reflect some inherent differences, for example, in susceptibility or opportunity for infection rather than the effects of attending or non attending the clinic.

Point prevalence studies in addition are seldom wholly satisfactory for the study of acute illness. However, questions such as history of diarrhoea in the past three months may provide information on differences in the levels of that illness in clinic attenders and non attenders. The interpretation, however, of any differences (or lack of differences), as already noted, in disease levels between attenders and non attenders may not be simple. In favour of point prevalence studies, it must be emphasized that, in spite of their limitations, useful information can be obtained. In purely practical terms such studies have great advantages in that they can be carried out both quickly and economically.

8.2 It is unlikely that a single point prevalence study conducted after a clinic has been in operation for a given length of time would allow one to decide whether or not the facility has conferred benefit to health on the attenders. It is therefore clear that rigorous evaluation of the effects on health can only satisfactorily be done by conducting a longitudinal survey. Here the population's health would be assessed before the introduction of the facility and at appropriate intervals thereafter, contrasting the initial and subsequent health of those who attend and do not attend.

It is recommended that before new health services are introduced, this base line measurement of health be made as well as further assessments after the clinics are established.

The alternative would be to have two comparable areas, and introduce the health facility only into one area, and observe these two areas after a period of time. In practice this poses many problems; one of which is to find adequate control areas for every area which is to have a health facility introduced. It may, however, not be practical, politic or ethical to withhold the introduction of clinics in these selected control areas.

8.3 The field and clinic study in the four areas has shown clearly the practicality of assessing the uptake of services provided by under fives clinics and also provided a crude assessment of the health of those children who attended or did not attend the under fives clinic. With certain modification to the field survey, for example, limiting the number of questions, and where necessary modifying them to suit the local situation, in order to study the population covered by clinic and the organization and work of the clinic, the general approach can be recommended for wider application.

9.0 <u>Sampling techniques</u>

The basic method of sampling proved practical, and there is no reason to believe that a satisfactory sample was not obtained. In the present survey it was decided to sample every consecutive dwelling. In a survey done by Webb (1968) she sampled every fifth dwelling, and this posed certain problems. The major problem resulted from mothers in the intervening non sampled dwellings also wanting to be included in the sample. This required a lengthy explanation for their exclusion, or they were examined and findings not included in the analysis. However in the light of local circumstances if it is felt that sampling consecutive dwellings might produce a biassed sample of children, every, for example, 2nd, 4th or 6th dwelling could be taken into the sample.

Home visits were not excessively time consuming. In those homes where the children did not have the home based records, less time was spent as the information was not available for extraction.

10.0 Questionnaire

10.1 The use of an interviewer administered questionnaire was found to be a useful method for obtaining the necessary information. If, in future, surveys are carried out by local staff then the need to use an interpreter would be eliminated.

10.2 The questionnaire used in the present study endeavoured to elicit information on a large number of items.

While this has adequate justification in a research project, for routine assessments fewer items of information could be collected.

The following items of information might be considered useful in the context of assessment of under fives clinics.

Questions related to child

(1) Age and sex of child

(2) Has the child got a 'Road-to-Health' card, if not why not?

(3) Age of child when card issued

(4) Weight of child as measured on day of survey

(5) Vaccinations given to child and number of doses

(6) Age at each vaccination

(7) Number of visits to Under Fives clinic

Questions related to family (mother)

(1) What is the purpose of vaccination?

(2) Reasons for Under Fives clinic attendance

(3) Reasons for non attendance at Under Fives clinic

(4) Ante natal clinic attendance

(5) Reasons for ante natal clinic attendance.

11.0 Community involvement in evaluation studies

11.1 There are considerable advantages if the community itself can be made responsible for assessment of its own health activities. This would involve the community not only in responsibility for collecting data from the field survey and clinic study but also in responsibility for the analysing of the data. This is an additional reason for reducing the amount of information collected in the field survey to those items of information that are really crucial to assessment.

The clinic staff needs to participate in any evaluation, as this gives them an insight into the impact of their work; also the results of such evaluations may be to hand earlier than if an outside agency is conducting the study and preparing the analysis. Analysis of the small number of items of information collected could consist of simple distributions of, for example, the proportion of attenders to non attenders by age and sex.

Such evaluation studies could well become a continuing part of any home visiting programmes already undertaken by the staff of the clinic in the normal course of their duties. Such a programme would have a dual effect, i.e. supplying information hopefully leading to better planning of the work of the clinic, and at the same time encourage mothers who do not attend to do so.

11.2 The setting up of studies and their analysis might be beyond the capabilities of the staff of a small clinic. If government is considering employing evaluation on a wide scale, a proforma would be prepared centrally, setting out the methods to be employed in data collection and including simple instructions for the local analysis of the data collected.

11.3 Considerable advantages can arise by carrying out evaluation studies using comparable methods. A standard protocol would be used to evaluate all clinics within a country. The present survey does suggest that such a protocol, incorporating simple standard methods, can be developed, such that it could be used by relatively untrained staff. In the present survey the author was a doctor with training in epidemiology. Also the documents used and methods of analysis were sophisticated. However, with simplified questionnaires, school children can be trained without difficulty to carry out similar evaluation studies. The method can be documented and explained by means of training manuals, or lectures. Specially trained lecturers could provide guidance on methods and procedures, and form a core staff to supervise training at regional and district level.

As a result of the preliminary findings from the present survey GALBRAITH (1974) has further developed the methodology and conducted a survey of under fives clinics in an area of West Africa. He has shown that in an investigation taking less than ten days, information can be obtained from a 10% sample of all the children in a village of 8,000. These results were efficiently and successfully analysed manually without the use of computers.

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APPENDIX 1

TABLE 1

MEAN WEIGHTS OF CHILDREN BY AGE AND BY AREA FOR ALL CHILDREN IN THE STUDY.(Numbers of children in parenthesis)

Age	ILESHA	ESA OKE	NAMITAMBO	MANSA
0 - 3 mth	4.45 (24)	3.96 (25)	4.09 (21)	5.47 (23)
3 - 6 mth	6.02 (34)	6.28 (14)	6.53 (25)	6.25 (20)
6 - 9 mth	7.57 (15)	6.69 (28)	6.87 (16)	8.13 (25)
9 - 12 mth	7.72 (25)	7.05 (24)	7.77 (27)	8.05 (28)
12 - 15 mth	8.93 (19)	8.40 (21)	7.51 (8)	8.51 (12)
15 - 18 mth	9.13 (21)	9.14 (18)	8.94 (27)	9.45 (20)
18 - 21 mth	9.67 (20)	9.60 (24)	9.82 (12)	9.38 (19)
21 - 24 mth	10.57 (22)	10.17 (31)	10.51 (17)	10.11 (16)
24 - 27 mth	10.84 (22)	10.78 (24)	10.61 (15)	10.14 (18)
27 - 30 mth	11.35 (20)	11.23 (16)	12.28 (15)	11.98 (14)
30 - 33 mth	12.06 (15)	11.10 (17)	11.18 (14)	12.30 (18)
33 - 36 mth	11.77 (22)	10.96 (16)	12.39 (5)	12.55 (15)
36 - 39 mth	12.71 (21)	12.12 (17)	12.74 (8)	12.98 (11)
39 - 42 mth	12.67 (13)	12.81 (18)	12.86 (6)	13.51 (10)
42 - 45 mth	13.25 (20)	13.31 (23)	13.70 (10)	14.34 (12)
45 - 48 mth	13.91 (20)	12.60 (18)	12.62 (11)	14.76 (15)
48 - 51 mth	14.70 (11)	13.97 (24)	14.19 (8)	15.08 (18)
51 - 54 mth	14.71 (15)	12.12 (10)	13.46 (3)	15.07 (4)
54 - 57 mth	14.89 (21)	14.26 (14)	13.79 (5)	17.06 (10)
57 - 60 mth	15.01 (13)	14.24 (13)	13.87 (3)	16.98 (2)

TABLE 2(a) MEAN WEIGHTS BY CLINIC ATTENDANCE BY AREA FOR CHILDREN AGED 0-UNDER 30 MONTHS

(Numbers of children in parenthesis

AGE	AREA							
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
0 - under 3 mth	4.13 (6)	4.55 (18)	4.20 (4)	3.92 (21)	3.81 (12)	4.46 (9)	4.59 (8)	5.84 (15)
3 - under 6 mth	6.12 (6)	5.98. (29)	6.11 (2)	6.31 (12)	6.86 (8)	6.37 (17)	5.15 (2)	6.38 (18)
6 - under 9 mth	14.06 (1)	7.10 (14)	7.29 (1)	6.67 (27)	6.27 (2)	6.89 (14)	8.09 (3)	8.14 (22)
9 - under 12 mth	8.16 (8)	7.68 (23)	6.12 (2)	7.13 (22)	7.28 (6)	7.92 (21)	8.11 (3)	8.04 (25)
12 - under 15 mth	8.99 (5)	8.91 (14)	7.82 (4)	8.54 (17)	7.05 (4)	7.97 (4)	(0)	8.51 (12)
15 - under 18 mth	9.24 (3)	9.11 (18)	(0)	9.14 (18)	9.03 (5)	8.92 (22)	11.45 (2)	9.22 (18)
18 - under 21 mth	9.53 (4)	9.70 (16)	8.48 (2)	9.71 (22)	9.65 (5)	9.94 (7)	9.41 (1)	9.37 (18)
21 - under 24 mth	9.61 (2)	10.66 (20)	10.79 (4)	10.08 (27)	10.29 (7)	10.65 (10)	10.04 (3)	10.12 (13)
24 - under 27 mth	8.17 (1)	10.96 (21)	10.28 (3)	10.85 (21)	10.50 (7)	10.71 (8)	8.88 (3)	10.39 (15)
27 - under 30 mth	12.59 (2)	11.22 (18)	9.07 (1)	11.37 (15)	12.03 (5)	12.40 (10)	12.34 (3)	11.88 (11)

*CA-Clinic attender

**NA-Clinic non attender

TABLE 2(b) MEAN WEIGHTS BY CLINIC ATTENDANCE BY AREA FOR CHILDREN AGED 30 MONTHS TO UNDER 60 MONTHS (Numbers of children in parenthesis)

AGE	A R E A							
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
30 - under 33 mth	12.08 (5)	12.05 (10)	11.34 (1)	11.08 (16)	10.74 (4)	11.36 (10)	13.01 (2)	12.22 (16)
33 - under 36 mth	10.89 (2)	11.86 (20)	9.30 (2)	11.20 (14)	12.59 (2)	12.27 (3)	12.59 (3)	12.54 (12)
36 - under 39 mth	10.77 (2)	12.91 (19)	9.75 (2)	12.44 (15)	12.05 (2)	12.82 (6)	12.32 (3)	13.23 (8)
39 - under 42 mth	(0)	12.67 (13)	(0)	12.81 (18)	12.13 (1)	13.01 (5)	16.44 (1)	13.18 (9)
42 - under 45 mth	11.79 (2)	13.41 (18)	12.47 (2)	13.39 (21)	(0)	13.70 (10)	15.20 (3)	14.05 (9)
45 - under 48 mth	11.79 (1)	14.07 (19)	(0)	12.60 (18)	9.75 (1)	12.91 (10)	13.83 (2)	14.90 (13)
48 - under 51 mth	(0)	14.70 (11)	14.51 (4)	13.86 (30)	13.65 (4)	14.23 (4)	14.76 (4)	15.17 (14)
51 - under 54 mth	14.97 (1)	14.70 (14)	16.78 (1)	14.94 (9)	(0)	13.46 (3)	(0)	15.07 (4)
54 - under 57 mth	(0)	14.89 (21)	(0)	14.26 (14)	13.15 (2)	14.21 (3)	15.76 (1)	17.20 (9)
57 - under 60 mth	(0)	15.01 (13)	14.51 (1)	14.21 (12)	13.87 (3)	(0)	16.98 (2)	(0)

*CA-Clinic attender
**NA- Clinic non attender

TABLE 3

DISTRIBUTION OF CHILDREN BY OWNERSHIP OF DWELLING AND BY CLINIC ATTENDANCE AND BY AREA

OWNERSHIP OF DWELLING	A R E A									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Own	67% (256)	71% (39)	91% (334)	81% (30)	88% (157)	88% (73)	77% (203)	72% (37)	80% (950)	79% (179)
Rented	33% (123)	29% (16)	9% (34)	19% (7)	4% (7)	5% (4)	18% (47)	24% (12)	18% (211)	17% (39)
Neither	0% (0)	0% (0)	0% (0)	0% (0)	8% (14)	7% (6)	5% (13)	4% (2)	2% (27)	4% (8)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 4

DISTRIBUTION OF CHILDREN BY TYPE OF WALLS IN DWELLING BY CLINIC ATTENDANCE BY AREA.

TYPE OF WALLS IN DWELLING	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Brick	45% (171)	57% (31)	33% (121)	38% (14)	2% (4)	6% (5)	16% (41)	12% (6)	28% (337)	24% (56)
Stone	22% (82)	25% (14)	27% (98)	11% (4)	3% (6)	4% (3)	2% (4)	4% (2)	16% (190)	10% (23)
Laterite	33% (126)	18% (10)	40% (149)	51% (19)	95% (168)	90% (75)	82% (218)	84% (43)	56% (661)	65% (147)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	99% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 5

DISTRIBUTION OF CHILDREN BY TYPE OF FLOOR IN DWELLING BY CLINIC ATTENDANCE BY AREA.

TYPE OF FLOOR IN DWELLING	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	*N.A.
Concrete	68% (259)	78% (43)	67% (248)	49% (18)	5% (9)	10% (8)	17% (44)	12% (6)	47% (560)	33% (75)
Mud	31% (116)	22% (12)	33% (120)	51% (19)	93% (166)	90% (75)	82% (216)	88% (45)	52% (618)	67% (151)
Wood	1% (4)	0% (0)	0% (0)	0% (0)	2% (3)	0% (0)	1% (3)	0% (0)	1% (10)	0% (0)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 6

DISTRIBUTION OF CHILDREN BY AVAILABILITY OF LATRINE BY CLINIC ATTENDANCE BY AREA.

AVAILABILITY OF LATRINE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Own	36.0% (138)	36.0% (20)	30.0% (112)	27.0% (10)	37.0% (65)	27.0% (22)	58.0% (150)	57.0% (29)	39.0% (465)	36.0% (81)
Shared	43.0% (160)	53.0% (29)	23.0% (85)	5.0% (2)	29.0% (51)	37.0% (31)	8.0% (22)	10.0% (5)	27.0% (318)	29.0% (67)
Public	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	1.0% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (2)	0.0% (0)
None	21.0% (81)	11.0% (6)	47.0% (171)	68.0% (25)	33.0% (60)	36.0% (30)	34.0% (91)	33.0% (17)	33.9% (403)	35.0% (78)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 7

DISTRIBUTION OF CHILDREN BY TYPE OF LATRINE BY CLINIC ATTENDANCE BY AREA.

TYPE OF LATRINE	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Flush	2.0% (6)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.5% (6)	0.0% (0)
Bucket	4.0% (15)	9.0% (5)	0.0% (0)	0.0% (0)	1.0% (2)	1.0% (1)	0.0% (0)	0.0% (0)	1.0% (17)	2.0% (6)
Pit	73.0% (277)	80.0% (44)	54.0% (197) 197	32.0% (12)	65.0% (116)	63.0% (52)	65.0% (172)	67.0% (34)	64.5% (762)	63.0% (142)
None	21.0% (81)	11.0% (6)	46.0% (171)	68.0% (25)	34.0% (60)	36.0% (30)	35.0% (91)	33.0% (17)	34.0% (403)	35.0% (78)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 8

DISTRIBUTION OF CHILDREN BY TYPE OF TRADE CARRIED OUT IN DWELLING BY CLINIC ATTENDANCE BY AREA

TYPE OF TRADE IN DWELLING	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Petty Sales	11.0% (43)	18.0% (10)	6.0% (21)	0.0% (0)	0.0% (0)	1.0% (1)	0.4% (1)	0.0% (0)	6.0% (65)	5.0% (11)
Tailor	4.0% (16)	0.0% (0)	4.0% (13)	8.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	2.0% (29)	1.0% (3)
Food sales	1.0% (4)	7.0% (4)	1.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.6% (7)	2.0% (4)
Other	1.0% (5)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (5)	0.0% (0)
None	83.0% (311)	75.0% (41)	89.0% (331)	92.0% (34)	100.0% (178)	99.0% (82)	99.6% (262)	100.0% (51)	91.0% (1082)	92.0% (208)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

* Clinic Attender
** linic Non Attender

TABLE 9

DISTRIBUTION OF CHILDREN BY TYPE MILK BY CLINIC ATTENDANCE BY AREA.

TYPE MILK THOUGHT BEST FOR CHILDREN 0 - 3 MONTHS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Breast milk	86.0% (325)	96.0% (52)	84.5% (311)	86.0% (32)	65.4% (117)	55.0% (46)	93.0% (244)	88.0% (45)	84.0% (997)	77.0% (175)
Artificial milk	7.0% (25)	2.0% (1)	10.0% (35)	11.0% (4)	31.0% (55)	38.0% (31)	2.0% (6)	4.0% (2)	10.0% (121)	17.0% (38)
Both	6.0% (24)	2.0% (2)	5.0% (20)	3.0% (1)	3.0% (5)	5.0% (4)	0.0% (0)	0.0% (0)	4.0% (49)	3.0% (7)
Do not know	1.0% (5)	0.0% (0)	0.5% (2)	0.0% (0)	0.6% (1)	2.0% (2)	5.0% (13)	8.0% (4)	2.0% (21)	3.0% (6)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 10

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY PARENTS BY AREA.

PARENTS OF THE CHILD	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Both alive	98.6% (374)	98.0% (54)	97.0% (357)	95.0% (35)	99.0% (176)	100.0% (83)	99.6% (262)	100.0% (51)	98.4% (1169)	99.0% (223)
Mother dead	0.3% (1)	0.0% (0)	0.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.2% (2)	0.0% (0)
Father dead	0.8% (3)	2.0% (1)	2.7% (10)	5.0% (2)	1.0% (2)	0.0% (0)	0.4% (1)	0.0% (0)	1.3% (16)	1.0% (3)
Both dead	0.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)	0.0% (0)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 11

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY PERSON LIVING WITH CHILD AND BY AREA

PERSON LIVING WITH CHILD	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Neither parent	3.0% (10)	2.0% (1)	0.5% (2)	5.0% (2)	1.0% (2)	2.0% (2)	2.0% (4)	2.0% (1)	2.0% (18)	4.0% (8)
Mother only	39.0% (151)	56.0% (31)	33.0% (121)	52.0% (19)	48.0% (85)	42.0% (35)	13.0% (35)	24.0% (12)	33.0% (392)	43.0% (97)
Father only	1.0% (3)	0.0% (0)	0.8% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	4.0% (2)	0.5% (6)	0.0% (0)
Both	57.0% (215)	42.0% (23)	65.7% (242)	43.0% (16)	51.0% (91)	56.0% (46)	85.0% (224)	70.0% (36)	64.5% (772)	53.0% (121)
TOTAL	100.0% (379)	100.0% (55)	100.0% (368)	100.0% (37)	100.0% (178)	100.0% (83)	100.0% (263)	100.0% (51)	100.0% (1188)	100.0% (226)

*Clinic Attenders
**Clinic Non Attenders

TABLE 12

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE BY ANTE NATAL VISITS OF MOTHER BY AREA.

ANTE NATAL VISITS BY MOTHER	AREA									
	ILESHA (NIGERIA)		EBA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Yes	89% (339)	71% (39)	94% (345)	70% (26)	91% (162)	78% (65)	91% (240)	67% (34)	91 (1086)	73% (164)
No	11% (40)	29% (16)	6% (23)	30% (11)	9% (16)	22% (18)	9% (23)	33% (17)	9% (102)	27% (62)
TOTAL	100% (379)	100% (55)	100% (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

TABLE 73

DISTRIBUTION OF CHILDREN BY CLINIC ATTENDANCE, BY REASONS GIVEN BY MOTHER FOR ANTE NATAL VISITS BY AREA.

REASONS FOR ANTE NATAL VISITS	AREA									
	ILESHA (NIGERIA)		ESA OKE (NIGERIA)		NAMITAMBO (MALAWI)		MANSA (ZAMBIA)		ALL AREAS	
	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.	*C.A.	**N.A.
Routine	69% (262)	46% (25)	86% (315)	67% (25)	81% (144	70% (58)	77% (204)	53% (27)	77% (925)	60% (135)
Complaints only	20% (77)	25% (14)	8% (30)	3% (1)	10% (18)	8% (7)	14% (36)	14% (7)	14% (161)	13% (29)
No ante-natal visits	11% (40)	29% (16)	6% (23)	30% 11)	9% (16)	22% (18)	9% (23)	33% (17)	9% (102)	27% (62)
TOTAL	100% (379)	100% (55)	100. (368)	100% (37)	100% (178)	100% (83)	100% (263)	100% (51)	100% (1188)	100% (226)

*Clinic Attender
**Clinic Non Attender

APPENDIX 2

SURVEY ON THE UTILIZATION OF CHILD HEALTH SERVICES

Conducted jointly by the Institute of Child Health and the London School of Hygiene and Tropical Medicine of the University of London. 1972. Interviewer: Dr. I.P. SENANAYAKE

QUESTIONNAIRE NO. 1. (To be filled in once for each dwelling)

1. Area......................
2. Dwelling No...............
3. Family No................,
4. Child No..................
5. Date of interview.......Day........month........year.
6. Total No. children under five who slept here last night.......
7. Total No. adult males who slept here last night..............
8. Total No. adult females who slept here last night...... ......
9. Total No. males(including children) who slept here last night..
10. Total No females who slept here last night(inc. children).....
11. Dwelling: .....owned.....rented.....norent/not owned
12. Is there a trade carried out in the dwelling ?....yes.....no.
13. If yes to quest: 12, what is it ?...........................
14. Walls of dwelling.....brick.....stone.....laterite.....other
15. Floor of dwelling.....cement.....mud.....wood.....other
16. Light and ventilation.....A......B......C
    (A. all rooms have windows that open to the exterior
    B. More than half the rooms have windows that open to exterior
    C. Half or less than half the rooms have windows that open to the exterior.
17. No of rooms used for sleeping:..........
18. Cooking is done:.....separate room.....part of living room .....outside.

19. Water for drinking is got from:.....pipe at home.....own well .....shared well......street pipe.....river/stream .....rain water.
20. Water for washing is got from:......same as in 19.....other
21. Time taken per day fr collecting water for.drinking:........
22. Time taken per day for collecting water for washing:.......
23. Distance to source of drinking water:.........
24. Distance to source of washing water:.........
25. Latrine:.....owned....shared....public.....none.
26. Type latrine :.....flush....pit.....bucket.....other.
27. Refuse:.....composting.....burning.....burying.....dumping.
28. Animals kept in the compound:.....pigs.....cows.....goats..... .....poultry.....sheep.

SURVEY ON THE UTILIZATION OF CHILD HEALTH SERVICES

Conducted jointly by the Institute of Child Health and the London School of Hygiene and Tropical Medicine of the University of London. 1972. Interviewer: Dr. I.P.SENANAYAKE

QUESTIONNAIRE NO 2. (To be filled in once for each family)

1. Area......................
2. Dwelling No...............Address..............
3. Family No................
4. Child No.................
5. Father & mother.....both alive.....Father dead.....mother dead......both dead.
6. Who lives in dwelling.....mother.....father.....both.....neither
7. No of children ever born to mother.........
8. No: of children alive today...............
9. No: born dead..........
10. No: that died after birth.....
11. When was the first child born.....day.....month.....year.
12. When was the last child born......day.....month.....year.
13. The following questions would be answered by.....father .....mother.....other.
14. Do children under the age of three months do better on: .....breast milk.....artificial milk.....both.... do not know
15. At what age do you think solids(paps rice biscuits) should be introduced to a child's diet?..........months.
16. Do you think water(un clean un boiled) could be a cause of disease?.....yes.....no.....do not know. If yes specify........ ....
17. What is the purpose of vaccination?.........................
18. Do you take your child to the under fives clinic?.....yes all children.....yes some children......no.

Questionnaire No. 2 contd:

19.If No to question 18 give reasons:............................

;...

20. If yes to question 18 give reasons.......................

....

21. In an emergency where would you take your sick child for treatment?...

22. How far is it to the clinic.........miles

23. How do you usually travel to the clinic?..................

24. How long does it usually take you to get to the clinic?.....

25. During your/your wife's last pregnancy did you/ your wife attend the ANC?.......yes.....no.....do not know.

26. If yes how many times.......

27. Purpose of attendance......routine.....for complaints only .....free supplies.....other.

SURVEY ON THE UTILIZATION OF CHILD HEALTH SERVICES

Conducted jointly by the Institute of Child Health and the London School of Hygiene and Tropical Medicine of the University of London, 1972. Interviewer: Dr. I.P. SENANAYAKE.

QUESTIONNAIRE NO: 3.(To be filled in once for each child under 5)

1. Area.... ....

2. Dwelling No:......... Adress of dwelling................

3. Family No:..........

4. Child No:............

5. Sex:.....male.....female

6. Name of child..................

7. Road to Health card.......never had one.....lost....not avail: .....seen.

8. Date of birth.....day.....month.....year.

9. Date card issued.....day.....month.....year.

10. If date of birth not known estimated age........

11. Age estimated by.....baptismal records...local calender. .....mother's recall.

12. O.P.D. visits to hospital in the 6 months preceding survey...

13. In patient spells so far in hospital......

14. Has the child had measles....yes....no....do not know.

15. Has the child had whooping cough....yes....no....do not know.

16. Weight of child today..........

17. Is the child well today?.....yes.....no if no specify........

18. skin lesions .....present......absent.

19. Umbilical hernia.....present.....absent.

Questionnaire No: 3 contd

20. Has the child had diarrhoea in the past three months which needed treatment?.....yes.....no.

21. Has the child had untreated diarrhoea in the last 3 months? .....yes.....no.

22. Number of stools passed in the last 24 hours?......

23. Smallpox vaccination- scar.....seen.....not seen

24. B.C.G. Vaccination scar seen.....not seen......

INFORMATION OBTAINED FROM THE ROAD TO HEALTH CARD(in those children with cards)

25. Smallpox vaccination.....given.....not given.
If given,.....day.....month.....year.

26. B.C.G......given.....not given.....day....month....year.

27. Triple vaccination. No injections 1 2 3

Triple ist dose.....day.....month.....year.

Triple 2nd dose.....day.....month.....year.

triple third dose...day.....month.....year.

28. Polio vaccination. no doses 1 2 3

ist dose polio...day...month.....year.

2nd dose polio...day.....month....year.

3rd dose polio....day....month....year.

29. Age in months at last weighing.........

30. weight at last weighing. ....

31. wieght 3 months ago........day.....month.....year......